

Max Hazard		Max Depth (m)		Max Velocity (m/s)	
	Less than 0.75 (Low Hazard)		0 - 0.25		0 - 0.3
	Between 0.75 and 1.25 (Danger for Some)		0.25 - 1.00		0.3 - 1.0
	Between 1.25 and 2.00 (Danger for Most)		1.00 - 1.50		1.0 - 1.5
	Greater than 2.00 (Danger for All)		1.50 - 2.00		1.5 - 2.5
			> 2.00		> 2.5
Date Printed	24/04/2020	Scenario year	2100	Scenario Annual Chance	MLWL

This map shows the combined flood hazard to people (called a hazard rating) if our flood defences are breached at any given single location, for a range of scenarios. The hazard rating depends on the depth and velocity of floodwater, and maximum values of these are also mapped.

The map is based on computer modelling of simulated breaches covering the entire extent between Teddington Weir and the Thames Barrier. Each breach has been modelled individually and the results combined to create this map. Multiple breaches, other combinations of breaches, different sized tidal surges or flood flows may all give different results.

The map only considers the consequences of a breach, it does not make any assumption about the likelihood of a breach occurring. The likelihood of a breach occurring will depend on a number of different factors, including the construction and condition of the defences in the area. A breach is less likely where defences are of a good standard, but a risk of breaching remains.

Please contact the Environment Agency for further information on emergency planning associated with flood risk in this area.

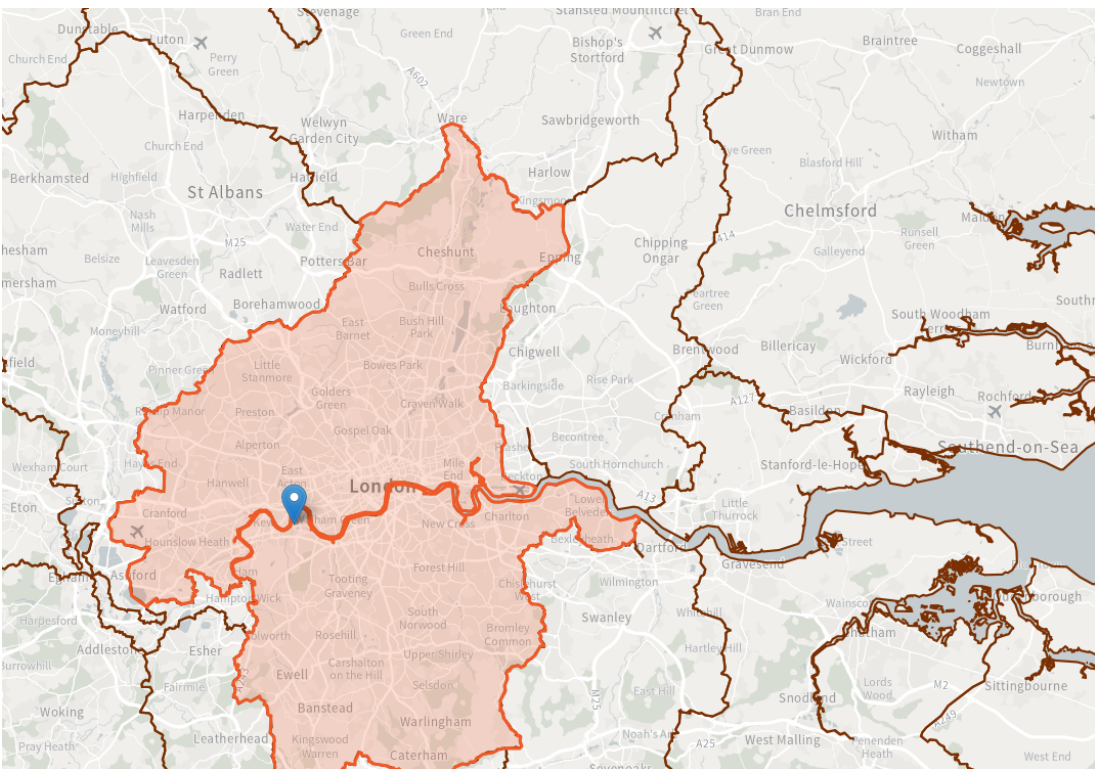
General Enquiries No: 03708 506 506. Weekday Daytime calls cost 5p plus up to 6p per minute from BT Weekend Unlimited. Mobile and other providers' charges may vary

Environment Agency

Thames Tidal Breach Hazard Mapping

Map Centred on SW13 9QE
KSL 326368 LMB

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Catchment peak rainfall allowances

3.3% annual exceedance rainfall event

Epoch	Central allowance	Upper end allowance
2050s	20%	35%
2070s	20%	35%

1% annual exceedance rainfall event

Epoch	Central allowance	Upper end allowance
2050s	20%	40%
2070s	25%	40%

*Use '2050s' for development with a lifetime up to 2060 and use the '2070s' epoch for development with a lifetime between 2061 and 2125.

Appendix C – Thames Water Asset Plans

Asset Location Search



Property Searches

Clancy Consulting Ltd
Queens House
19 Upper King Street
NORWICH
NR3 1RB

Search address supplied 34
Nassau Road
London
SW13 9QE

Your reference 34 Nassau Road

Our reference ALS/ALS/24/2024_4987800

Search date 10 May 2024

Notification of Price Changes

From 1st April 2024 Thames Water Property Searches will be increasing the prices of its CON29DW Residential and Commercial searches along with the Asset Location Search. Costs will rise in line with RPI as per previous years, which is set at 6%.

Customers will be emailed with the new prices by February 28th 2024.

Any orders received with a higher payment prior to the 1st April 2024 will be non-refundable. For further details on the price increase please visit our website at www.thameswater-propertysearches.co.uk.



Thames Water Utilities Ltd
Property Searches, PO Box 3189, Slough SL1 4WW

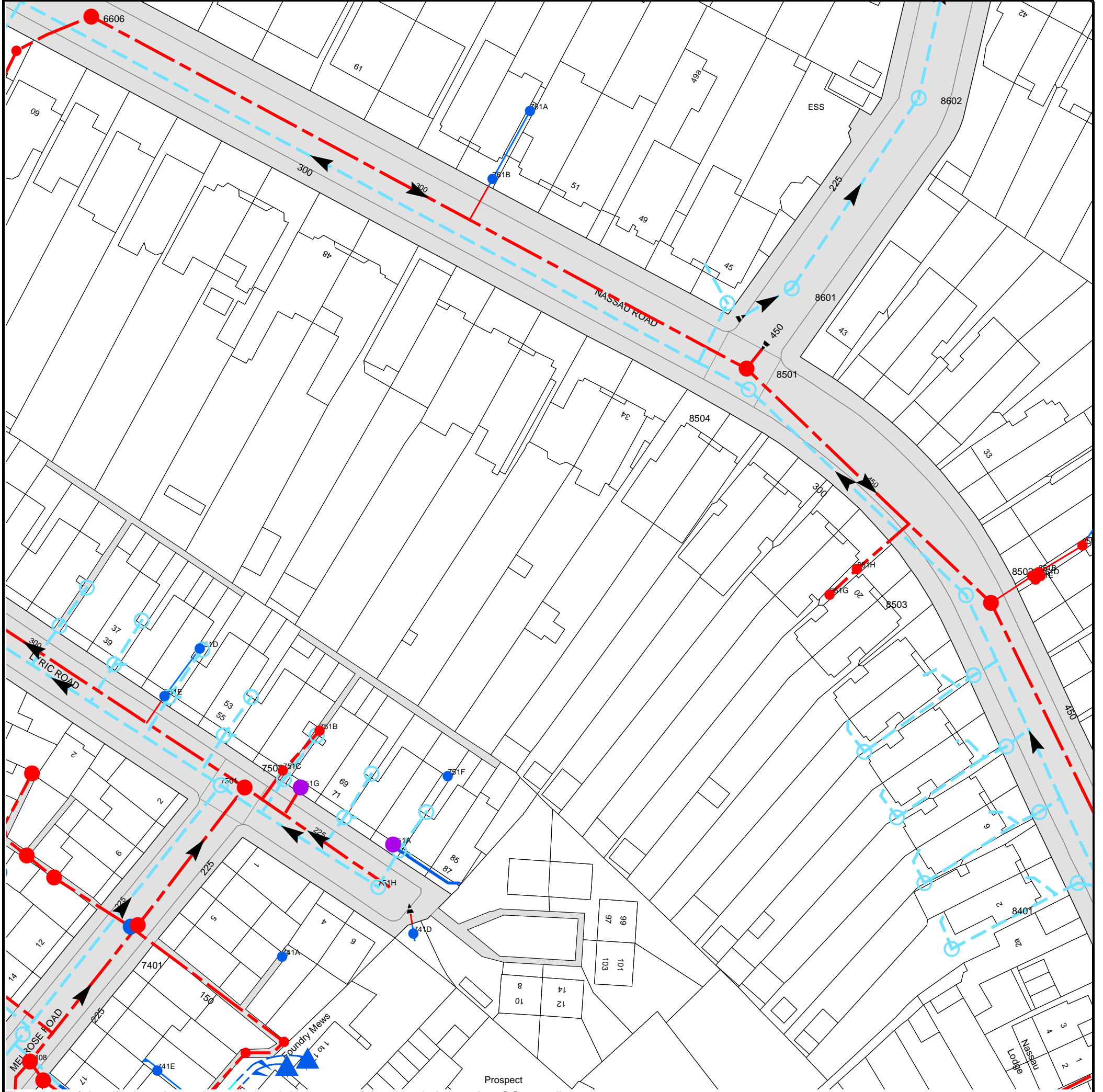


searches@thameswater.co.uk
www.thameswater-propertysearches.co.uk



0800 009 4540

Asset Location Search Sewer Map - ALS/ALS/24/2024_4987800



The width of the displayed area is 200 m and the centre of the map is located at OS coordinates 521780,176563

The position of the apparatus shown on this plan is given without obligation and warranty, and the accuracy cannot be guaranteed. Service pipes are not shown but their presence should be anticipated. No liability of any kind whatsoever is accepted by Thames Water for any error or omission. The actual position of mains and services must be verified and established on site before any works are undertaken.

Based on the Ordnance Survey Map (2020) with the Sanction of the controller of H.M. Stationery Office, License no. 100019345 Crown Copyright Reserved.

NB. Levels quoted in metres Ordnance Newlyn Datum. The value -9999.00 indicates that no survey information is available
















Manhole Reference	Manhole Cover Level	Manhole Invert Level
8602	n/a	n/a
84ZS	n/a	n/a
85YP	n/a	n/a
85XT	n/a	n/a
85WW	n/a	n/a
85XR	n/a	n/a
85VY	n/a	n/a
85WT	n/a	n/a
85VW	n/a	n/a
8502	4.78	.66
8503	4.77	2.41
851G	n/a	n/a
851E	n/a	n/a
851C	n/a	n/a
851D	n/a	n/a
851B	n/a	n/a
851H	n/a	n/a
851A	n/a	n/a
74ZQ	n/a	n/a
74YZ	n/a	n/a
741A	n/a	n/a
741D	n/a	n/a
751H	n/a	n/a
75XT	n/a	n/a
751A	n/a	n/a
75XX	n/a	n/a
75XV	n/a	n/a
751G	n/a	n/a
7502	5.17	2.2
7501	5.19	3.46
75YP	n/a	n/a
751F	n/a	n/a
75XY	n/a	n/a
751C	n/a	n/a
75YT	n/a	n/a
75YQ	n/a	n/a
751B	n/a	n/a
75YV	n/a	n/a
75YZ	n/a	n/a
751D	n/a	n/a
8504	4.94	1.97
8501	5.08	.87
86YZ	n/a	n/a
8601	4.99	3.44
761B	n/a	n/a
761A	n/a	n/a
6606	4.74	1.19
6402	4.4	4.02
6408	5.37	3.04
64XZ	n/a	n/a
741E	n/a	n/a
74ZT	n/a	n/a
7401	5.23	2.63
65ZV	n/a	n/a
65ZW	n/a	n/a
65ZY	n/a	n/a
75YY	n/a	n/a
751E	n/a	n/a
75ZQ	n/a	n/a
65WP	n/a	n/a
75ZR	n/a	n/a
65WQ	n/a	n/a
66ZV	n/a	n/a

The position of the apparatus shown on this plan is given without obligation and warranty, and the accuracy cannot be guaranteed. Service pipes are not shown but their presence should be anticipated. No liability of any kind whatsoever is accepted by Thames Water for any error or omission. The actual position of mains and services must be verified and established on site before any works are undertaken.









Asset Location Search - Sewer Key

Public Sewer Types (Operated and maintained by Thames Water)

-  **Foul Sewer:** A sewer designed to convey waste water from domestic and industrial sources to a treatment works.
-  **Surface Water Sewer:** A sewer designed to convey surface water (e.g. rain water from roofs, yards and car parks) to rivers or watercourses.
-  **Combined Sewer:** A sewer designed to convey both waste water and surface water from domestic and industrial sources to a treatment works.
-  Storm Sewer
-  Sludge Sewer
-  Foul Trunk Sewer
-  Surface Trunk Sewer
-  Combined Trunk Sewer
-  Foul Rising Main
-  Surface Water Rising Main
-  Combined Rising Main
-  Vacuum
-  Thames Water Proposed
-  Vent Pipe
-  Gallery

Other Sewer Types (Not operated and maintained by Thames Water)

-  Sewer
-  Culverted Watercourse
-  Proposed
-  Decommissioned Sewer
-  Content of this drainage network is currently unknown
-  Ownership of this drainage network is currently unknown

Notes:

- 1) All levels associated with the plans are to Ordnance Datum Newlyn.
- 2) All measurements on the plan are metric.
- 3) Arrows (on gravity fed sewers) or flecks (on rising mains) indicate the direction of flow.
- 4) Most private pipes are not shown on our plans, as in the past, this information has not been recorded.

Sewer Fittings

A feature in a sewer that does not affect the flow in the pipe. Example: a vent is a fitting as the function of a vent is to release excess gas.

-  Air Valve
-  Meter
-  Dam Chase
-  Vent
-  Fitting

Operational Controls

A feature in a sewer that changes or diverts the flow in the sewer. Example: A hydrobrake limits the flow passing downstream.

-  Ancillary
-  Drop Pipe
-  Control Valve
-  Weir

End Items

End symbols appear at the start or end of a sewer pipe. Examples: an Undefined End at the start of a sewer indicates that Thames Water has no knowledge of the position of the sewer upstream of that symbol. Outfall on a surface water sewer indicates that the pipe discharges into a stream or river.

-  Inlet
-  Outfall
-  Undefined End




Other Symbols

Symbols used on maps which do not fall under other general categories.





-  Change of Characteristic Indicator
-  Public / Private Pumping Station
-  Invert Level
-  Summit

Areas

Lines denoting areas of underground surveys, etc.

-  Agreement
-  Chamber
-  Operational Site

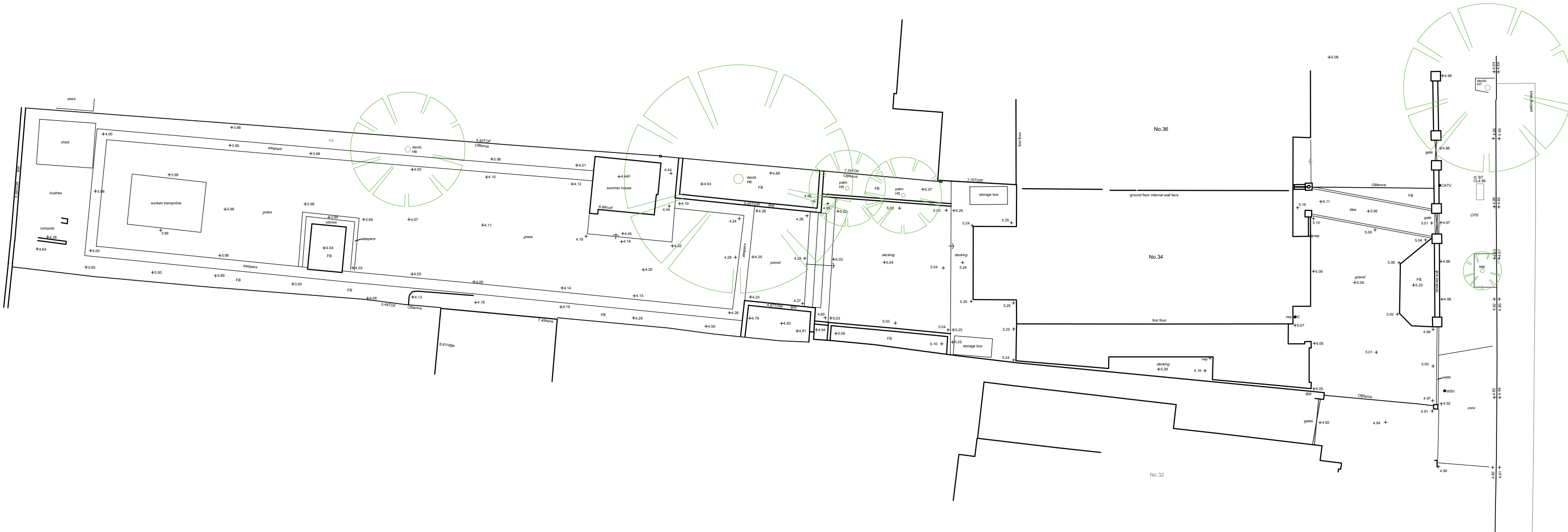
Ducts or Crossings

-  Casement
 -  Conduit Bridge
 -  Subway
 -  Tunnel
- Ducts may contain high voltage cables. Please check with Thames Water.

5) 'na' or 'of' on a manhole indicates that data is unavailable.

6) The text appearing alongside a sewer line indicates the internal diameter of the pipe in millimeters. Text next to a manhole indicates the manhole reference number and should not be taken as a measurement. If you are unsure about any text or symbology, please contact Property Searches on 0800 009 4540.

Appendix D – Topographical & CCTV Survey



1 | SITE PLAN AS EXISTING
 00-01 | SCALE: 1:200 @ A3 // 1:50 @ A1

DISCLAIMER:
 Dimensions to be verified on site. Only figured dimensions to be used and any discrepancies in dimensions are to be reported to RJHA. No dimensions are to be scaled from printed drawings. Any areas indicated on this drawing are for guidance only. No responsibility is taken for their accuracy.
 There is a risk of injury or death in construction if works are not properly planned and supervised. The contractor must not undertake any elements of the work without first having carried out the necessary risk assessments and prepare detailed method statements.

SCALE RULE:

KEY:

- REVISIONS
- IN ABEYANCE
- EXISTING WALL

NOTES:

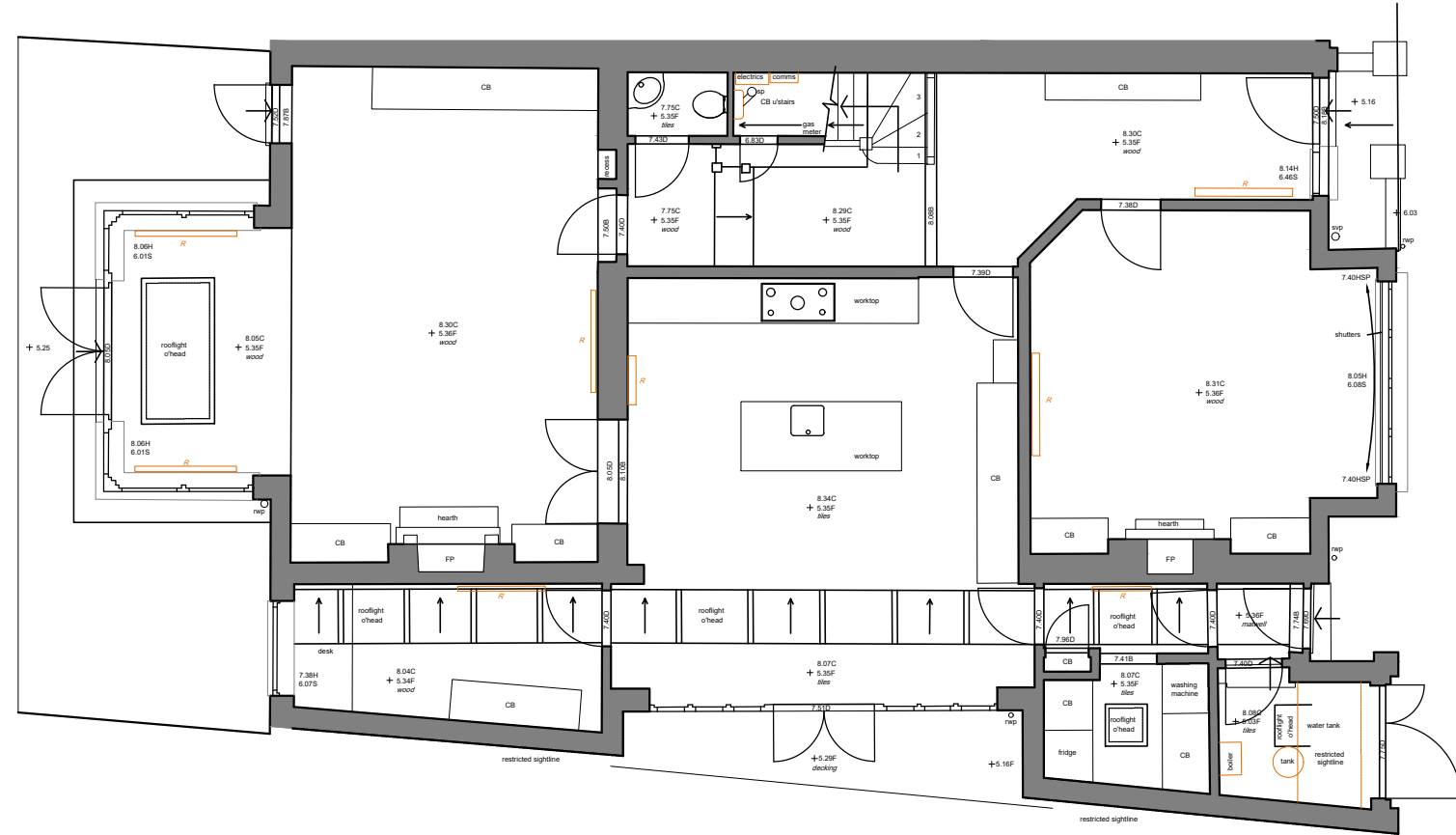
REV.	DESCRIPTION:	BY:	DATE:
-	-	-	-

STAGE:

INFORMATION

RICHARD JAMES HASTINGS ARCHITECTURE
 A: VICARAGE HOUSE, KENSINGTON CHURCH ST, W8 4DB
 E: CONTACT@RJHARCHITECTURE.COM

Client	PRIVATE		
Address	34 NASSAU ROAD, SW13 6BA		
TITLE	SITE PLAN AS EXISTING		
DRAWING	2313_00-01		
REV.	-	SCALE	AS STATED
STATUS	INFORMATION	DRAWN	GP
DATE	19.06.2023	CHECKED	RJH



1 | GROUND FLOOR PLAN AS EXISTING
 00-10 | SCALE: 1:100 @ A3 // 1:50 @ A1

DISCLAIMER:
 Dimensions to be verified on site. Only figured dimensions to be used and any discrepancies in dimensions are to be reported to RJHA. No dimensions are to be scaled from printed drawings. Any areas indicated on this drawing are for guidance only. No responsibility is taken for their accuracy.
 There is a risk of injury or death in construction if works are not properly planned and supervised. The contractor must not undertake any elements of the work without first having carried out the necessary risk assessments and prepare detailed method statements.

SCALE RULE:

KEY:

- REVISIONS
- IN ABEYANCE
- EXISTING WALL

NOTES:

REV.	DESCRIPTION:	BY:	DATE:
-	-	-	-

STAGE:

INFORMATION

RICHARD JAMES HASTINGS ARCHITECTURE
 A: VICARAGE HOUSE, KENSINGTON CHURCH ST, W8 4DB
 E: CONTACT@RJHARCHITECTURE.COM

Client	PRIVATE		
Address	34 NASSAU ROAD, SW13 6BA		
TITLE	GROUND FLOOR PLAN AS EXISTING		
DRAWING	2313_00-10		
REV.	-	SCALE	AS STATED
STATUS	INFORMATION	DRAWN	GP
DATE	19.06.2023	CHECKED	RJH

Project

Project Name: 34nassauroad

Project Description: WinCan Import in Miraculix WRc4 Standard

Project Date: 10/10/2023





Table of Contents

Project Name	Project Number	Project Date
34nassauroad		10/10/2023

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Section Item 1: swmh1 ust > SA (swmh1 ustX)	1
Section Item 2: swmh1 dst > sewer (swmh1 dstX)	5
Section Item 3: fwmh1 dst > sewer (fwmh1 dstX)	7
Section Item 4: fwmh1 ust > fwmh2 (fwmh1 ustX)	9
Section Item 5: fwmh1 ust1 > svp1 (fwmh1 ust1X)	13
Section Item 6: fwmh1 ust2 > plantroom (fwmh1 ust2X)	15
.....	17

Project Information

Project Name
34nassauroad

Project Number

Project Date
10/10/2023

Client

Company: Richard Hastings
Contact: Cristina Mazzucco
Street: 34 Nassau Road
Town or City: London
Post Code: SW13 9QE
Email: cristina.mazzucco@rjharchitecture.com



Site

Company: Richard Hastings
Contact: Cristina Mazzucco
Street: 34 Nassau road
Town or City: London
Post Code: SW13 9QE



Contractor

Company: RF DRAINS
Description: Drainage Services
Contact: Rui Fernandes
Street: 71 Trent road
Town or City: Slough
Post Code: SL3 8AW
Mobile: 07899 272 567
Email: rfdrains@gmail.com



Project Information

Project Name
34nassauroad

Project Number

Project Date
10/10/2023

Project Notes

Notes:

34 Nassau road - London

Trap jumper camera with a 512mhz sonde and locator used to trace and locate the buried manholes(swmh1 and fwmh1) . Manholes located on the right hand side of the main gate entrance.

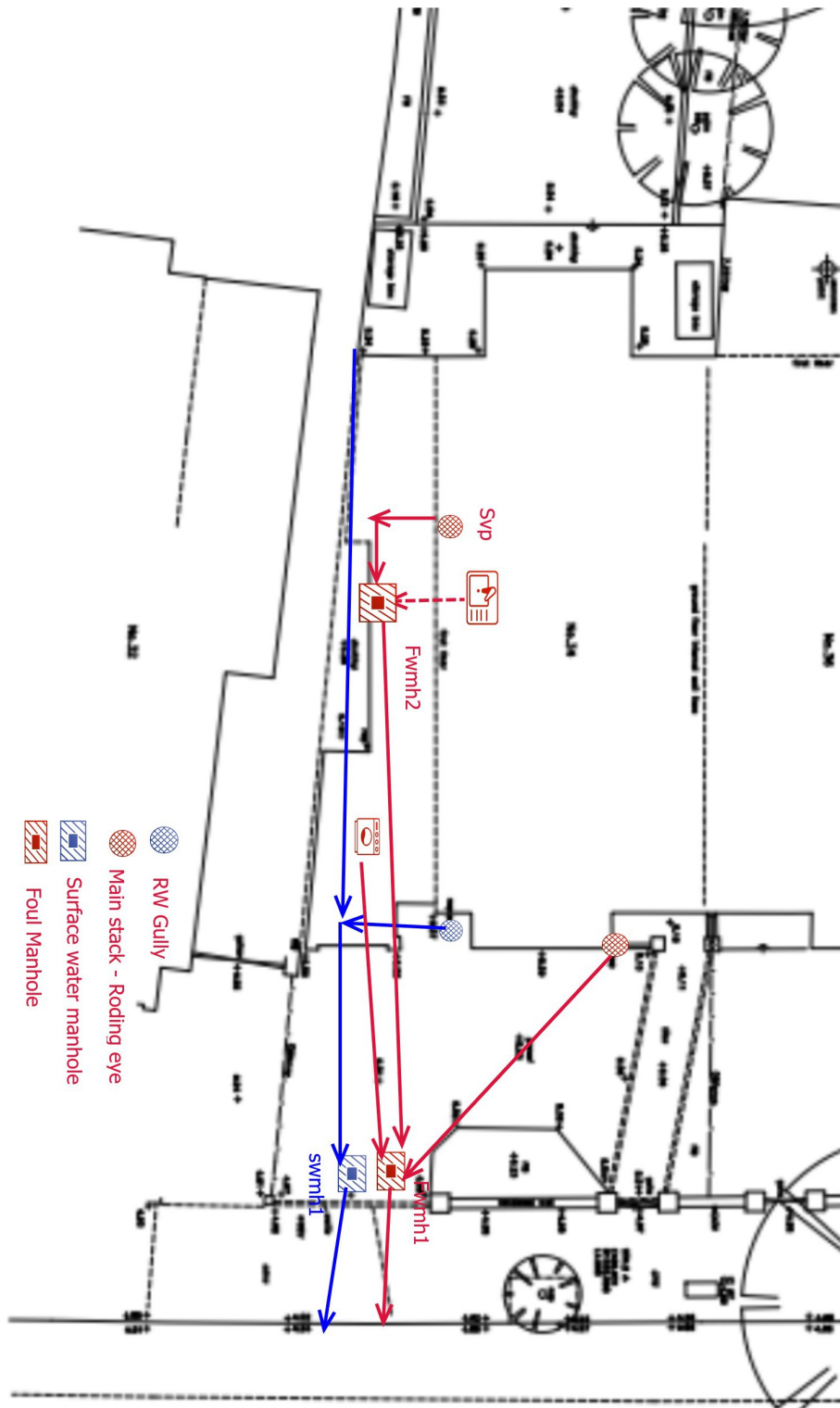
fwmh2 was located near the kitchen window under the tiles (not exposed.

Rui Fernandes

Project Information

Project Name 34nassauroad	Project Number	Project Date 10/10/2023
------------------------------	----------------	----------------------------

Project Drawing, Page '34nassauroad'



Project Pictures

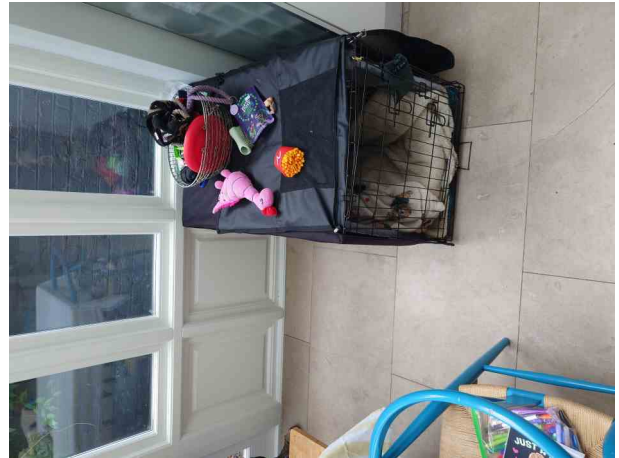
Project Name
 34nassauroad

Project Number

Project Date
 10/10/2023



20240202_113846



area for fwmh2



front gully



fwmh



Manholes exposed



Manholes

Project Pictures

Project Name
34nassauroad

Project Number

Project Date
10/10/2023



svp1



swmh

Section Profile

Project Name
34nassauroad

Project Number

Project Date
10/10/2023

Circular, 100 mm

Item No.	Upstream Node	Downstream Node	Date	Road	Pipe Material	Total Length	Inspected Length
2	swmh1 dst	sewer	07/02/2024	34 Nassau road	Vitrified clay pipe (i.e. all clayware)	5.66 m	5.66 m
4	fwmh1 ust	fwmh2	07/02/2024	34 Nassau road	Vitrified clay pipe (i.e. all clayware)	17.18 m	17.18 m
5	fwmh1 ust1	svp1	07/02/2024	34 Nassau road	Vitrified clay pipe (i.e. all clayware)	8.44 m	8.44 m

Total: 3 Inspections x Circular 100 mm = 31.28 m Total Length and 31.28 m Inspected Length

Total: 3 Inspections = 31.28 m Total Length and 31.28 m Inspected Length

Section Summary

Project Name 34nassauroad	Project Number	Project Date 10/10/2023
-------------------------------------	-----------------------	-----------------------------------

Number of sections	6
Total length of sections	57.28 m
Total length of inspected sections	56.51 m
Total length of not inspected sections	0.77 m
Number of abandoned inspections	3
Number of section inspection photos	30
Number of section inspection videos	6
Number of section inspection scans	0
Number of section inclination measurements	0

PLR: swmh1 ustX	Upstream Node: swmh1 ust
Inspection Direction: Downstream	Downstream Node: SA
Inspected Length: 13.53 m	Dia/Height: 100 mm
Total Length: 13.53 m	Pipe Material: Vitrified clay pipe (i.e. all clayware)

No.	m+	Code	Observation
1	0.00	MH	Start node, manhole, reference: swmh1 ust
2	4.79	CC	Crack, circumferential from 10 o'clock to 3 o'clock
3	5.62	JN	Junction at 3 o'clock, diameter: 100mm
4	7.75	CC	Crack, circumferential from 9 o'clock to 2 o'clock
5	8.40	CC	Crack, circumferential from 9 o'clock to 4 o'clock
6	9.58	JN	Junction at 12 o'clock, diameter: 100mm
7	9.73	DER	Settled deposits, coarse, 25% cross-sectional area loss, start
8	13.53	DER	Settled deposits, coarse, 60% cross-sectional area loss, finish
9	13.53	SA	Survey abandoned

PLR: swmh1 dstX	Upstream Node: swmh1 dst
Inspection Direction: Downstream	Downstream Node: sewer
Inspected Length: 5.66 m	Dia/Height: 100 mm
Total Length: 5.66 m	Pipe Material: Vitrified clay pipe (i.e. all clayware)

No.	m+	Code	Observation
1	0.00	MH	Start node, manhole, reference: swmh1 dst
2	5.66	BRF	Finish node, major connection without manhole, reference: sewer

PLR: fwmh1 dstX	Upstream Node: fwmh1 dst
Inspection Direction: Downstream	Downstream Node: sewer
Inspected Length: 7.03 m	Dia/Height: 100 mm
Total Length: 7.03 m	Pipe Material: Vitrified clay pipe (i.e. all clayware)

Section Summary

Project Name 34nassauroad	Project Number	Project Date 10/10/2023
-------------------------------------	-----------------------	-----------------------------------

No.	m+	Code	Observation
1	0.00	MH	Start node, manhole, reference: fwmh1 dst
2	5.47	FC	Fracture, circumferential from 3 o'clock to 7 o'clock
3	6.65	DEE	Attached deposits, encrustation from 4 o'clock to 8 o'clock, 40% cross-sectional area loss
4	7.03	SA	Survey abandoned

PLR: fwmh1 ustX	Upstream Node: fwmh1 ust
Inspection Direction: Downstream	Downstream Node: fwmh2
Inspected Length: 17.18 m	Dia/Height: 100 mm
Total Length: 17.18 m	Pipe Material: Vitrified clay pipe (i.e. all clayware)

No.	m+	Code	Observation
1	0.00	MH	Start node, manhole, reference: fwmh1 ust
2	0.00	WL	Water level, 10% of the vertical dimension
3	5.05	CC	Crack, circumferential from 9 o'clock to 2 o'clock
4	9.96	CM	Cracks, multiple from 11 o'clock to 2 o'clock
5	12.39	CC	Crack, circumferential from 9 o'clock to 3 o'clock
6	13.98	JN	Junction at 3 o'clock, diameter: 100mm
7	14.48	REM	General remark
8	15.62	LR	Line deviates right
9	16.68	LU	Line deviates up
10	17.18	BRF	Finish node, major connection without manhole, reference: Svp

PLR: fwmh1 ust1X	Upstream Node: fwmh1 ust1
Inspection Direction: Downstream	Downstream Node: svp1
Inspected Length: 8.44 m	Dia/Height: 100 mm
Total Length: 8.44 m	Pipe Material: Vitrified clay pipe (i.e. all clayware)

No.	m+	Code	Observation
1	0.00	MH	Start node, manhole, reference: fwmh1 ust1
2	8.44	BRF	Finish node, major connection without manhole, reference: svp1

PLR: fwmh1 ust2X	Upstream Node: fwmh1 ust2
Inspection Direction: Downstream	Downstream Node: plantroom
Inspected Length: 4.67 m	Dia/Height: 100 mm
Total Length: 5.44 m	Pipe Material: Vitrified clay pipe (i.e. all clayware)

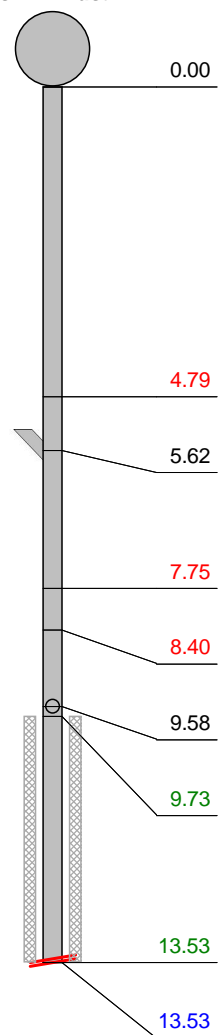
No.	m+	Code	Observation
1	0.00	MH	Start node, manhole, reference: fwmh1 ust2
2	4.67	CUD	Loss of vision, silt
3	4.67	SA	Survey abandoned

Section Inspection - 07/02/2024 - swmh1 ustX

Item No. 1	Insp. No. 1	Date 07/02/24	Time 21:49	Client's Job Ref 01	Weather No Rain Or Snow	Pre Cleaned No	PLR SWMH1 USTX
Operator Not Specified		Vehicle Not Specified		Camera Not Specified	Preset Length Not Specified	Legal Status Not Specified	Alternative ID Not Specified

Town or Village: London	Inspection Direction: Downstream	Upstream Node: SWMH1 UST
Road: 34 Nassau Road	Inspected Length: 13.53 m	Upstream Pipe Depth: 1300.000 m
Location: Surface Type:	Total Length: 13.53 m	Downstream Node: SA
Use: Surface water	Joint Length:	Downstream Pipe Depth:
Type of Pipe: Flow Control: Year Constructed: Inspection Purpose:	Pipe Shape: Dia/Height: Pipe Material: Lining Type: Lining Material:	Circular 100 mm Vitrified clay pipe (i.e. all clayware) No Lining No Lining

Comments:
Recommendations:

Scale:	1:117	Position [m]	Code	Observation	MPEG	Photo	Grade
<p>Depth: 1300.00 m swmh1 ust</p> 							
	0.00	MH		Start node, manhole, reference: swmh1 ust	00:00:00	swmh1 ustX_575e 0cbc-3c57-	
	4.79	CC		Crack, circumferential from 10 o'clock to 3 o'clock	00:00:43	swmh1 ustX_744d b1a9-66bf-	2
	5.62	JN		Junction at 3 o'clock, diameter: 100mm: RW GULLY FRONT	00:01:01	swmh1 ustX_ddc1 52bf-132d-	
	7.75	CC		Crack, circumferential from 9 o'clock to 2 o'clock	00:01:23	swmh1 ustX_9934 facb-32d6-	2
	8.40	CC		Crack, circumferential from 9 o'clock to 4 o'clock	00:01:31	swmh1 ustX_88fb 792e-55b9	2
	9.58	JN		Junction at 12 o'clock, diameter: 100mm	00:01:42	swmh1 ustX_0260 c911-b0a5	
	9.73	S01	DER	Settled deposits, coarse, 25% cross-sectional area loss, start	00:01:49	swmh1 ustX_234c 706c-b2e1	
	13.53	F01	DER	Settled deposits, coarse, 60% cross-sectional area loss, finish	00:02:22	swmh1 ustX_ea60 d295-071d	4
	13.53	SA		Survey abandoned: Survey abandoned due settled deposits coarse in the pipe	00:02:22	swmh1 ustX_6634 cadc-a9b0-	

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
3	10.0	2.2	30.0	2.0	1	5.0	1.5	20.0	4.0

Section Pictures - 07/02/2024 - swmh1 ustX

Item No.	Inspection Direction	PLR	Client's Job Ref	Contractor's Job Ref
1	Downstream	SWMH1 USTX	01	



swmh1
ustX_575e0cbc-3c57-432e-9542-33f1bea78013_20240207_221
616_731.jpg, 00:00:00, 0.00 m
Start node, manhole, reference: swmh1 ust



swmh1
ustX_744db1a9-66bf-4853-be06-8646d82032f3_20240207_221
800_805.jpg, 00:00:43, 4.79 m
Crack, circumferential from 10 o'clock to 3 o'clock



swmh1
ustX_ddc152bf-132d-4025-a85d-9dd618a7cd65_20240207_22
2312_190.jpg, 00:01:01, 5.62 m
Junction at 3 o'clock, diameter: 100mm, RW GULLY FRONT



swmh1
ustX_9934facb-32d6-4f6c-9b6a-c3d7c3e11067_20240207_222
401_502.jpg, 00:01:23, 7.75 m
Crack, circumferential from 9 o'clock to 2 o'clock

Section Pictures - 07/02/2024 - swmh1 ustX

Item No.	Inspection Direction	PLR	Client's Job Ref	Contractor's Job Ref
1	Downstream	SWMH1 USTX	01	



swmh1
ustX_88fb792e-55b9-48ef-bc98-570d9852f815_20240207_222
441_859.jpg, 00:01:31, 8.40 m
Crack, circumferential from 9 o'clock to 4 o'clock



swmh1
ustX_0260c911-b0a5-43b6-a559-8199e072db75_20240207_22
2522_039.jpg, 00:01:42, 9.58 m
Junction at 12 o'clock, diameter: 100mm



swmh1
ustX_234c706c-b2e1-4624-b9bc-79ff22d21aa0_20240207_222
604_259.jpg, 00:01:49, 9.73 m
Settled deposits, coarse, 25% cross-sectional area loss, start



swmh1
ustX_ea60d295-071d-4961-abab-0d2ce511bfaa_20240207_222
849_671.jpg, 00:02:22, 13.53 m
Settled deposits, coarse, 60% cross-sectional area loss, finish

Section Pictures - 07/02/2024 - swmh1 ustX

Item No.	Inspection Direction	PLR	Client's Job Ref	Contractor's Job Ref
1	Downstream	SWMH1 USTX	01	



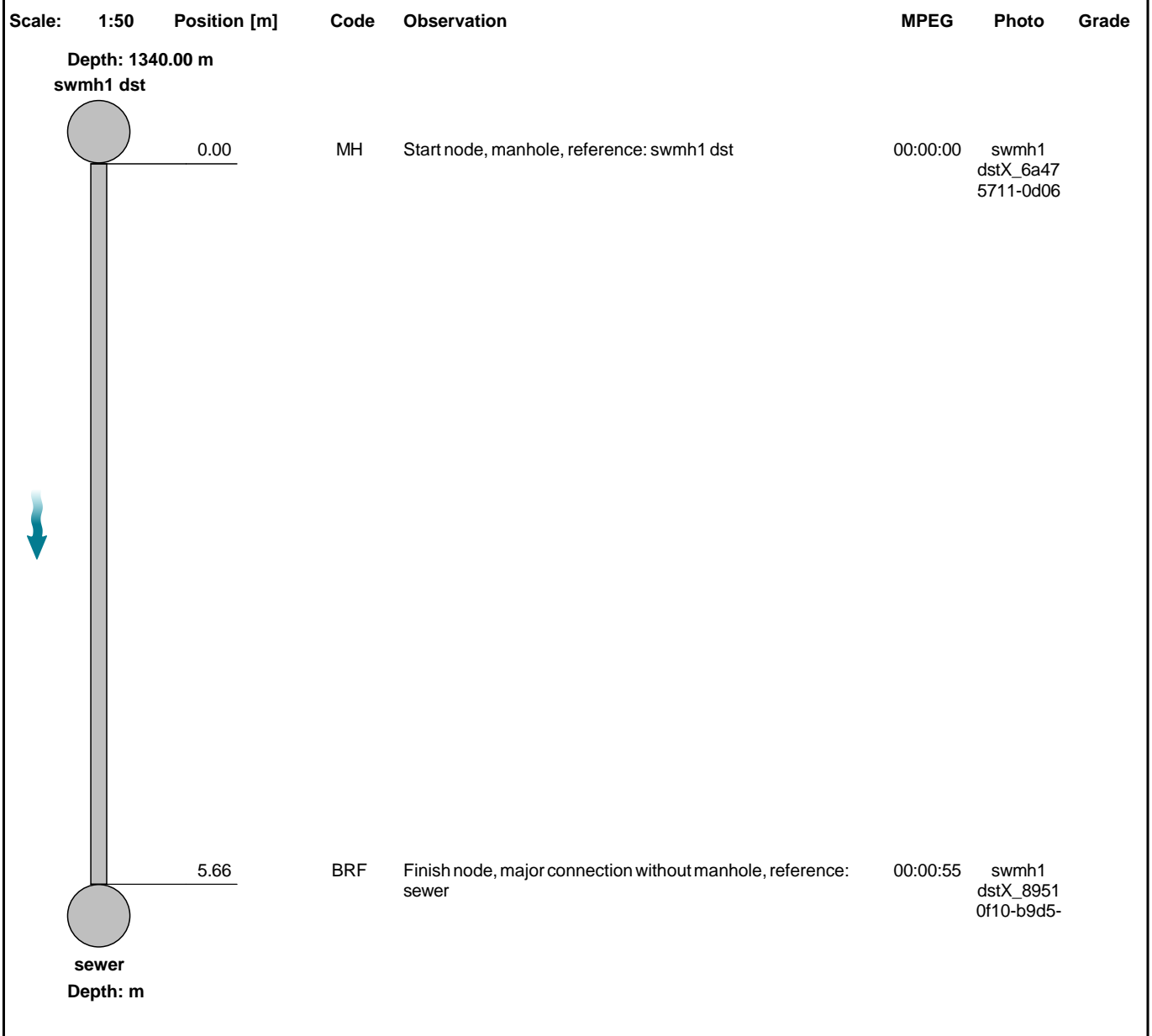
swmh1
ustX_6634cadc-a9b0-4104-a63f-66d5dcec7ec6_20240207_222
929_225.jpg, 00:02:22, 13.53 m
Survey abandoned, Survey abandoned due settled deposits
coarse in the pipe

Section Inspection - 07/02/2024 - swmh1 dstX

Item No. 2	Insp. No. 1	Date 07/02/24	Time 21:50	Client's Job Ref 01	Weather No Rain Or Snow	Pre Cleaned No	PLR SWMH1 DSTX
Operator Not Specified		Vehicle Not Specified		Camera Not Specified	Preset Length Not Specified	Legal Status Not Specified	Alternative ID Not Specified

Town or Village: London	Inspection Direction: Downstream	Upstream Node: SWMH1 DST
Road: 34 Nassau Road	Inspected Length: 5.66 m	Upstream Pipe Depth: 1340.000 m
Location:	Total Length: 5.66 m	Downstream Node: SEWER
Surface Type:	Joint Length:	Downstream Pipe Depth:
Use: Surface water	Pipe Shape: Circular	
Type of Pipe:	Dia/Height: 100 mm	
Flow Control: No flow control	Pipe Material: Vitrified clay pipe (i.e. all clayware)	
Year Constructed: Not Specified	Lining Type: No Lining	
Inspection Purpose: Routine inspection of condition	Lining Material: No Lining	

Comments:
Recommendations:



Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
0	0.0	0.0	0.0	1.0	0	0.0	0.0	0.0	1.0

Section Pictures - 07/02/2024 - swmh1 dstX

Item No.	Inspection Direction	PLR	Client's Job Ref	Contractor's Job Ref
2	Downstream	SWMH1 DSTX	01	



swmh1
dstX_6a475711-0d06-4ae5-8729-b93e5636e4bb_20240207_22
3101_845.jpg, 00:00:00, 0.00 m
Start node, manhole, reference: swmh1 dst



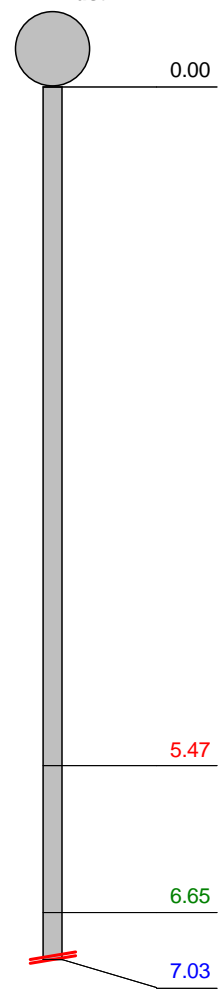
swmh1
dstX_89510f10-b9d5-4fd2-bedd-96ab472e9c7a_20240207_223
305_472.jpg, 00:00:55, 5.66 m
Finish node, major connection without manhole, reference: sewer

Section Inspection - 07/02/2024 - fwmh1 dstX

Item No. 3	Insp. No. 1	Date 07/02/24	Time 21:50	Client's Job Ref 01	Weather No Rain Or Snow	Pre Cleaned No	PLR FWMH1 DSTX
Operator Not Specified		Vehicle Not Specified		Camera Not Specified	Preset Length Not Specified	Legal Status Not Specified	Alternative ID Not Specified

Town or Village: London	Inspection Direction: Downstream	Upstream Node: FWMH1 DST
Road: 34 Nassau Road	Inspected Length: 7.03 m	Upstream Pipe Depth: 1360.000 m
Location: Surface Type:	Total Length: 7.03 m	Downstream Node: SEWER
Use: Foul	Joint Length:	Downstream Pipe Depth:
Type of Pipe: Flow Control: Year Constructed: Inspection Purpose:	Pipe Shape: Dia/Height: Pipe Material: Lining Type: Lining Material:	Circular 100 mm Vitrified clay pipe (i.e. all clayware) No Lining No Lining

Comments:
Recommendations:

Scale:	1:61	Position [m]	Code	Observation	MPEG	Photo	Grade																								
<div style="display: flex; align-items: flex-start;"> <div style="margin-right: 20px;"> <p>Depth: 1360.00 m fwmh1 dst</p>  </div> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 15%; text-align: center;">0.00</td> <td style="width: 5%; text-align: center;">MH</td> <td style="width: 40%;">Start node, manhole, reference: fwmh1 dst</td> <td style="width: 10%; text-align: center;">00:00:00</td> <td style="width: 10%;">fwmh1 dstX_b4e2 3b4b-b114</td> <td style="width: 5%;"></td> </tr> <tr> <td style="text-align: center; color: red;">5.47</td> <td style="text-align: center; color: red;">FC</td> <td style="color: red;">Fracture, circumferential from 3 o'clock to 7 o'clock</td> <td style="text-align: center; color: red;">00:00:34</td> <td style="color: red;">fwmh1 dstX_096b f927-93a1-</td> <td style="text-align: center; color: red;">3</td> </tr> <tr> <td style="text-align: center; color: green;">6.65</td> <td style="text-align: center; color: green;">DEE</td> <td style="color: green;">Attached deposits, encrustation from 4 o'clock to 8 o'clock, 40% cross-sectional area loss</td> <td style="text-align: center; color: green;">00:00:41</td> <td style="color: green;">fwmh1 dstX_83d3 0b6c-5624</td> <td style="text-align: center; color: green;">4</td> </tr> <tr> <td style="text-align: center; color: blue;">7.03</td> <td style="text-align: center; color: blue;">SA</td> <td style="color: blue;">Survey abandoned: Survey abandoned due attached deposits</td> <td style="text-align: center; color: blue;">00:00:44</td> <td style="color: blue;">fwmh1 dstX_32dd 3c81-7bda</td> <td></td> </tr> </table> </div>								0.00	MH	Start node, manhole, reference: fwmh1 dst	00:00:00	fwmh1 dstX_b4e2 3b4b-b114		5.47	FC	Fracture, circumferential from 3 o'clock to 7 o'clock	00:00:34	fwmh1 dstX_096b f927-93a1-	3	6.65	DEE	Attached deposits, encrustation from 4 o'clock to 8 o'clock, 40% cross-sectional area loss	00:00:41	fwmh1 dstX_83d3 0b6c-5624	4	7.03	SA	Survey abandoned: Survey abandoned due attached deposits	00:00:44	fwmh1 dstX_32dd 3c81-7bda	
0.00	MH	Start node, manhole, reference: fwmh1 dst	00:00:00	fwmh1 dstX_b4e2 3b4b-b114																											
5.47	FC	Fracture, circumferential from 3 o'clock to 7 o'clock	00:00:34	fwmh1 dstX_096b f927-93a1-	3																										
6.65	DEE	Attached deposits, encrustation from 4 o'clock to 8 o'clock, 40% cross-sectional area loss	00:00:41	fwmh1 dstX_83d3 0b6c-5624	4																										
7.03	SA	Survey abandoned: Survey abandoned due attached deposits	00:00:44	fwmh1 dstX_32dd 3c81-7bda																											
Construction Features				Miscellaneous Features																											
Structural Defects				Service & Operational Observations																											
STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade																						
1	40.0	5.7	40.0	3.0	1	5.0	0.7	5.0	4.0																						

Section Pictures - 07/02/2024 - fwmh1 dstX

Item No.	Inspection Direction	PLR	Client's Job Ref	Contractor's Job Ref
3	Downstream	FWMH1 DSTX	01	



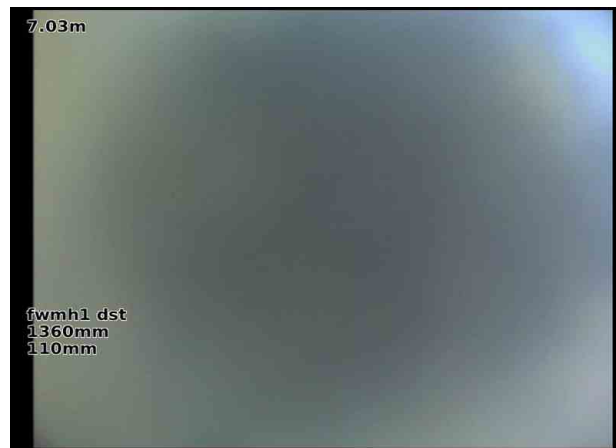
fwmh1
dstX_b4e23b4b-b114-4f0f-874c-64836493a88c_20240207_223
518_988.jpg, 00:00:00, 0.00 m
Start node, manhole, reference: fwmh1 dst



fwmh1
dstX_096bf927-93a1-4fe4-b8ad-7e2d9b055c24_20240207_223
712_243.jpg, 00:00:34, 5.47 m
Fracture, circumferential from 3 o'clock to 7 o'clock



fwmh1
dstX_83d30b6c-5624-4347-8e81-75e390a2cda4_20240207_22
3828_574.jpg, 00:00:41, 6.65 m
Attached deposits, encrustation from 4 o'clock to 8 o'clock, 40%
cross-sectional area loss



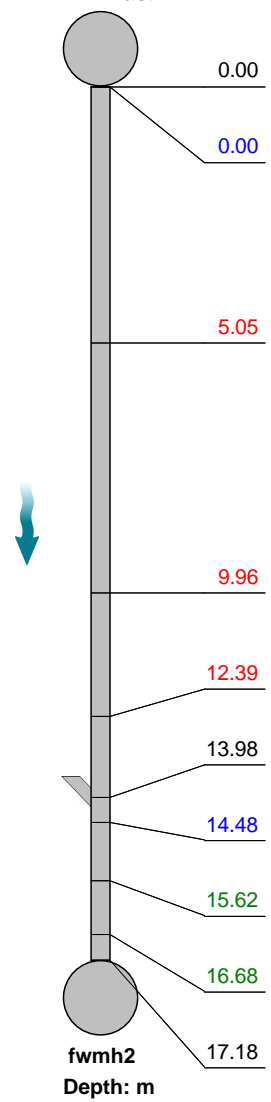
fwmh1
dstX_32dd3c81-7bda-403d-b316-99e3548e1163_20240207_22
3932_953.jpg, 00:00:44, 7.03 m
Survey abandoned, Survey abandoned due attached deposits

Section Inspection - 07/02/2024 - fwmh1 ustX

Item No. 4	Insp. No. 1	Date 07/02/24	Time 21:51	Client's Job Ref 01	Weather No Rain Or Snow	Pre Cleaned No	PLR FWMH1 USTX
Operator Not Specified		Vehicle Not Specified		Camera Not Specified	Preset Length Not Specified	Legal Status Not Specified	Alternative ID Not Specified

Town or Village: London	Inspection Direction: Downstream	Upstream Node: FWMH1 UST
Road: 34 Nassau Road	Inspected Length: 17.18 m	Upstream Pipe Depth: 1350.000 m
Location:	Total Length: 17.18 m	Downstream Node: FWMH2
Surface Type:	Joint Length:	Downstream Pipe Depth:
Use: Foul	Pipe Shape: Circular	
Type of Pipe:	Dia/Height: 100 mm	
Flow Control: No flow control	Pipe Material: Vitrified clay pipe (i.e. all clayware)	
Year Constructed: Not Specified	Lining Type: No Lining	
Inspection Purpose: Routine inspection of condition	Lining Material: No Lining	

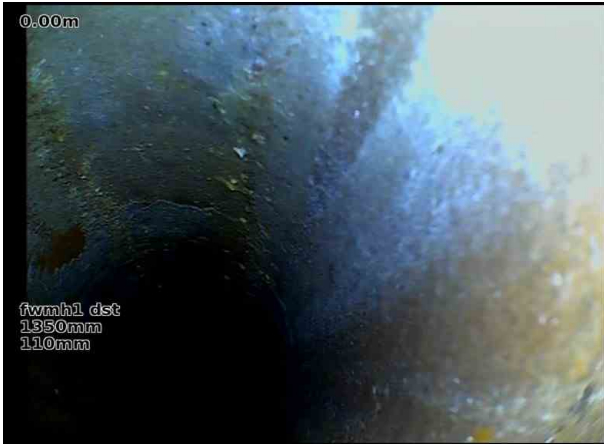
Comments:
Recommendations:

Scale:	1:149	Position [m]	Code	Observation	MPEG	Photo	Grade
<p>Depth: 1350.00 m fwmh1 ust</p> 							
		0.00	MH	Start node, manhole, reference: fwmh1 ust	00:00:00	fwmh1 ustX_a5fdf eea-6f2e-4	
		0.00	WL	Water level, 10% of the vertical dimension	00:00:44	fwmh1 ustX_380a f52e-14c3-	
		5.05	CC	Crack, circumferential from 9 o'clock to 2 o'clock	00:00:36	fwmh1 ustX_b9be 31e4-d4da	2
		9.96	CM	Cracks, multiple from 11 o'clock to 2 o'clock	00:01:21	fwmh1 ustX_470b 1b70-0fa4-	3
		12.39	CC	Crack, circumferential from 9 o'clock to 3 o'clock	00:01:44	fwmh1 ustX_7772 0550-3be4	2
		13.98	JN	Junction at 3 o'clock, diameter: 100mm: Redundant junction	00:01:57	fwmh1 ustX_6f7f9 2c5-4e28-	
		14.48	REM	General remark: fwmh2 reached.survey will proceed	00:02:16	fwmh1 ustX_58cc 0362-8061	
		15.62	LR	Line deviates right: full	00:02:27	fwmh1 ustX_f340 9cce-d124-	
		16.68	LU	Line deviates up: full	00:02:38	fwmh1 ustX_ad42 8c48-da88	
		17.18	BRF	Finish node, major connection without manhole, reference: Svp	00:02:42	fwmh1 ustX_46e3 897f-16dc-	

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
3	40.0	3.5	60.0	3.0	0	0.0	0.0	0.0	1.0

Section Pictures - 07/02/2024 - fwmh1 ustX

Item No.	Inspection Direction	PLR	Client's Job Ref	Contractor's Job Ref
4	Downstream	FWMH1 USTX	01	



fwmh1
ustX_a5fdfeea-6f2e-42df-8e6a-85b1eadca41e_20240207_2242
19_858.jpg, 00:00:00, 0.00 m
Start node, manhole, reference: fwmh1 ust



fwmh1
ustX_380af52e-14c3-486b-93ff-29d7bd52e557_20240207_224
604_407.jpg, 00:00:44, 0.00 m
Water level, 10% of the vertical dimension



fwmh1
ustX_b9be31e4-d4da-4770-a288-e532082d8efe_20240207_224
342_831.jpg, 00:00:36, 5.05 m
Crack, circumferential from 9 o'clock to 2 o'clock



fwmh1
ustX_470b1b70-0fa4-41ef-996a-31671add2df9_20240207_225
139_933.jpg, 00:01:21, 9.96 m
Cracks, multiple from 11 o'clock to 2 o'clock

Section Pictures - 07/02/2024 - fwmh1 ustX

Item No.	Inspection Direction	PLR	Client's Job Ref	Contractor's Job Ref
4	Downstream	FWMH1 USTX	01	



fwmh1
ustX_77720550-3be4-41dc-984a-ca4aefc549b7_20240207_225
230_182.jpg, 00:01:44, 12.39 m
Crack, circumferential from 9 o'clock to 3 o'clock



fwmh1
ustX_6f7f92c5-4e28-4a54-a6c5-e3c877256071_20240207_225
328_659.jpg, 00:01:57, 13.98 m
Junction at 3 o'clock, diameter: 100mm, Redundant junction



fwmh1
ustX_58cc0362-8061-4ce3-9e34-90d3158d4cc3_20240207_22
5435_937.jpg, 00:02:16, 14.48 m
General remark, fwmh2 reached.survey will proceed



fwmh1
ustX_f3409cce-d124-43a1-8347-99480b4b0e70_20240207_225
539_679.jpg, 00:02:27, 15.62 m
Line deviates right, full

Section Pictures - 07/02/2024 - fwmh1 ustX

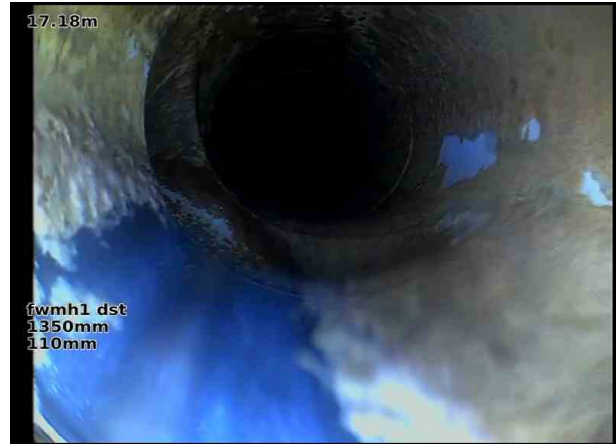
Item No.	Inspection Direction	PLR	Client's Job Ref	Contractor's Job Ref
4	Downstream	FWMH1 USTX	01	



fwmh1 dst
1350mm
110mm

fwmh1

ustX_ad428c48-da88-4916-b6ed-07c9621359a0_20240207_22
5631_587.jpg, 00:02:38, 16.68 m
Line deviates up, full



fwmh1 dst
1350mm
110mm

fwmh1

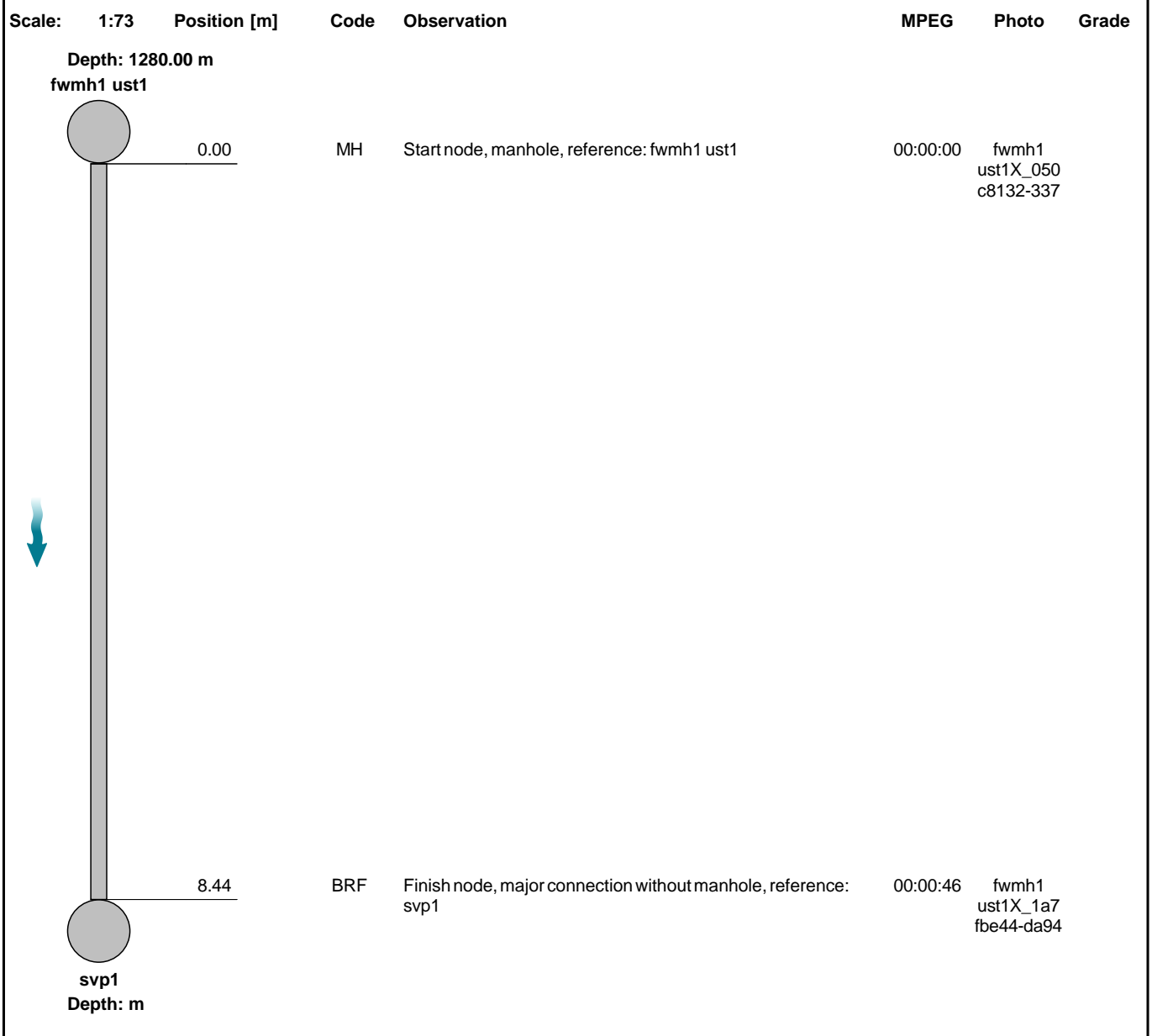
ustX_46e3897f-16dc-4775-9c83-cca4ec727a27_20240207_225
718_050.jpg, 00:02:42, 17.18 m
Finish node, major connection without manhole, reference: Svp

Section Inspection - 07/02/2024 - fwmh1 ust1X

Item No. 5	Insp. No. 1	Date 07/02/24	Time 21:51	Client's Job Ref 01	Weather No Rain Or Snow	Pre Cleaned No	PLR FWMH1 UST1X
Operator Not Specified		Vehicle Not Specified		Camera Not Specified	Preset Length Not Specified	Legal Status Not Specified	Alternative ID Not Specified

Town or Village: London	Inspection Direction: Downstream	Upstream Node: FWMH1 UST1
Road: 34 Nassau Road	Inspected Length: 8.44 m	Upstream Pipe Depth: 1280.000 m
Location:	Total Length: 8.44 m	Downstream Node: SVP1
Surface Type:	Joint Length:	Downstream Pipe Depth:
Use: Foul	Pipe Shape: Circular	
Type of Pipe:	Dia/Height: 100 mm	
Flow Control: No flow control	Pipe Material: Vitrified clay pipe (i.e. all clayware)	
Year Constructed: Not Specified	Lining Type: No Lining	
Inspection Purpose: Routine inspection of condition	Lining Material: No Lining	

Comments:
Recommendations:



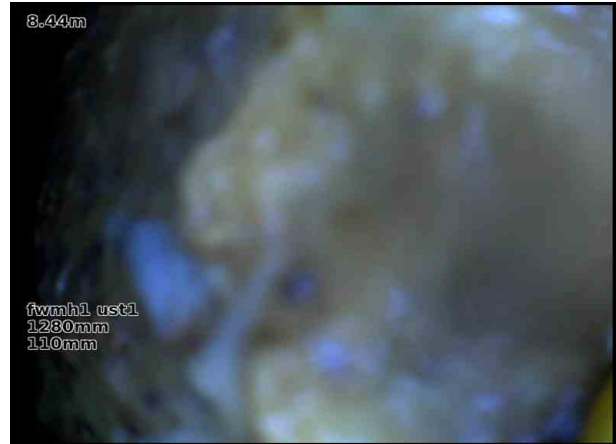
Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
0	0.0	0.0	0.0	1.0	0	0.0	0.0	0.0	1.0

Section Pictures - 07/02/2024 - fwmh1 ust1X

Item No.	Inspection Direction	PLR	Client's Job Ref	Contractor's Job Ref
5	Downstream	FWMH1 UST1X	01	



fwmh1
ust1X_050c8132-337f-40a8-9bdd-d4d7d3cf4e33_20240207_22
5913_935.jpg, 00:00:00, 0.00 m
Start node, manhole, reference: fwmh1 ust1



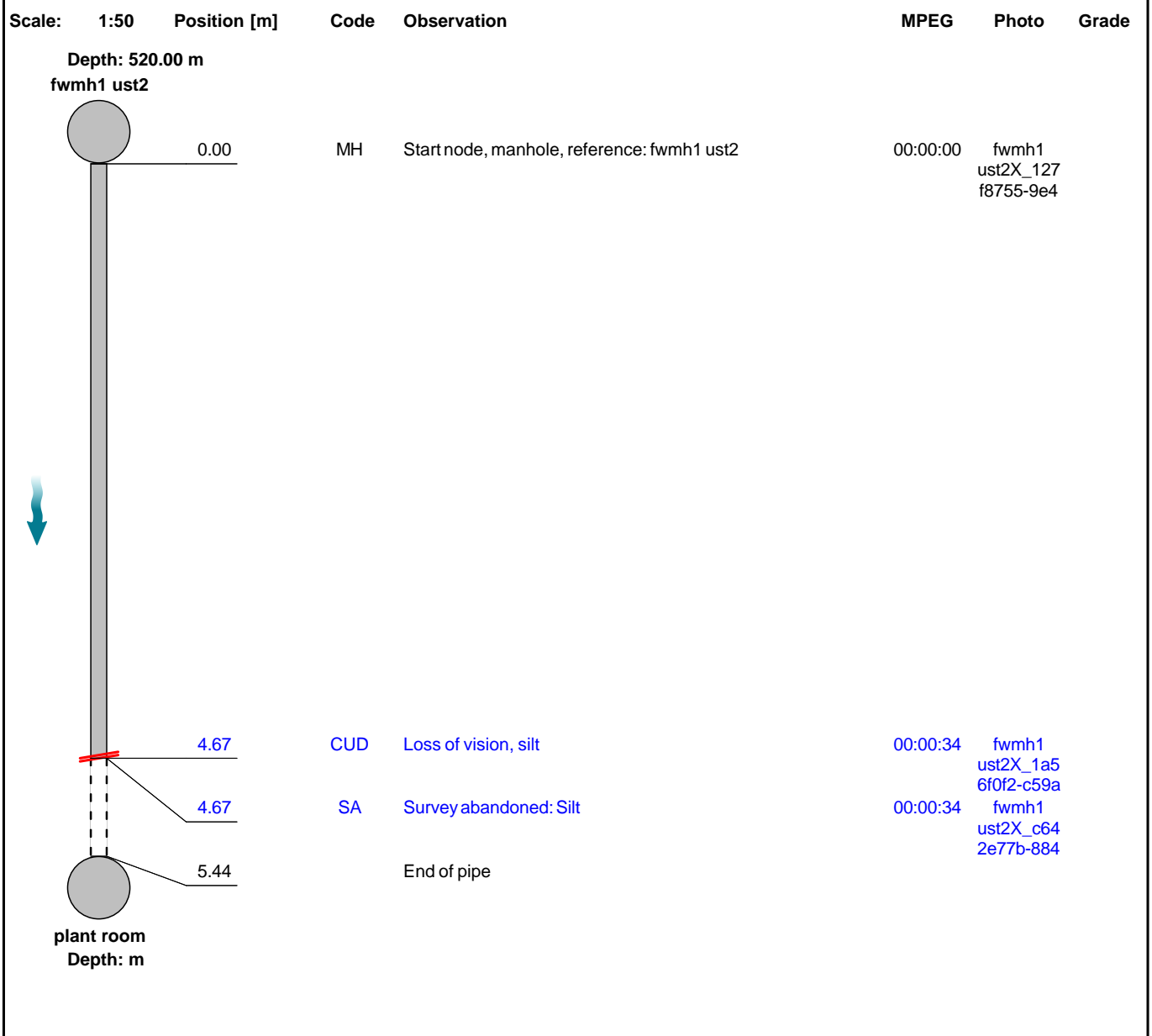
fwmh1
ust1X_1a7fbe44-da94-4063-8e35-5c635eb87476_20240207_23
0040_914.jpg, 00:00:46, 8.44 m
Finish node, major connection without manhole, reference: svp1

Section Inspection - 07/02/2024 - fwmh1 ust2X

Item No. 6	Insp. No. 1	Date 07/02/24	Time 21:55	Client's Job Ref 01	Weather No Rain Or Snow	Pre Cleaned No	PLR FWMH1 UST2X
Operator Not Specified		Vehicle Not Specified		Camera Not Specified	Preset Length Not Specified	Legal Status Not Specified	Alternative ID Not Specified

Town or Village: London	Inspection Direction: Downstream	Upstream Node: FWMH1 UST2
Road: 34 Nassau Road	Inspected Length: 4.67 m	Upstream Pipe Depth: 520.000 m
Location: Surface Type:	Total Length: 5.44 m	Downstream Node: PLANT ROOM
Use: Foul	Joint Length:	Downstream Pipe Depth:
Type of Pipe: Flow Control: Year Constructed: Inspection Purpose:	Pipe Shape: Dia/Height: Pipe Material: Lining Type: Lining Material:	Circular 100 mm Vitrified clay pipe (i.e. all clayware) No Lining No Lining

Comments:
Recommendations:



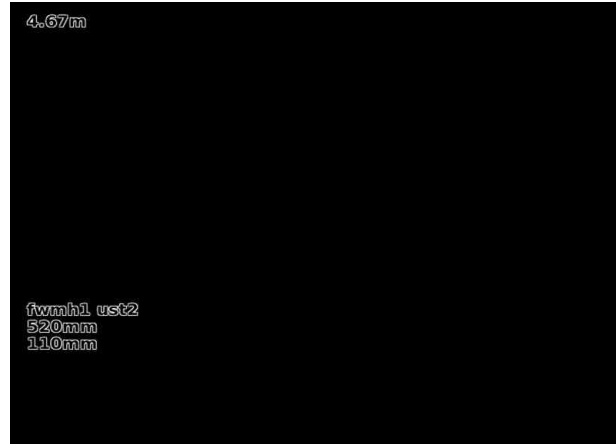
Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
0	0.0	0.0	0.0	1.0	0	0.0	0.0	0.0	1.0

Section Pictures - 07/02/2024 - fwmh1 ust2X

Item No.	Inspection Direction	PLR	Client's Job Ref	Contractor's Job Ref
6	Downstream	FWMH1 UST2X	01	



fwmh1
ust2X_127f8755-9e42-43df-b262-c778cd27fb33_20240207_230217_398.jpg, 00:00:00, 0.00 m
Start node, manhole, reference: fwmh1 ust2

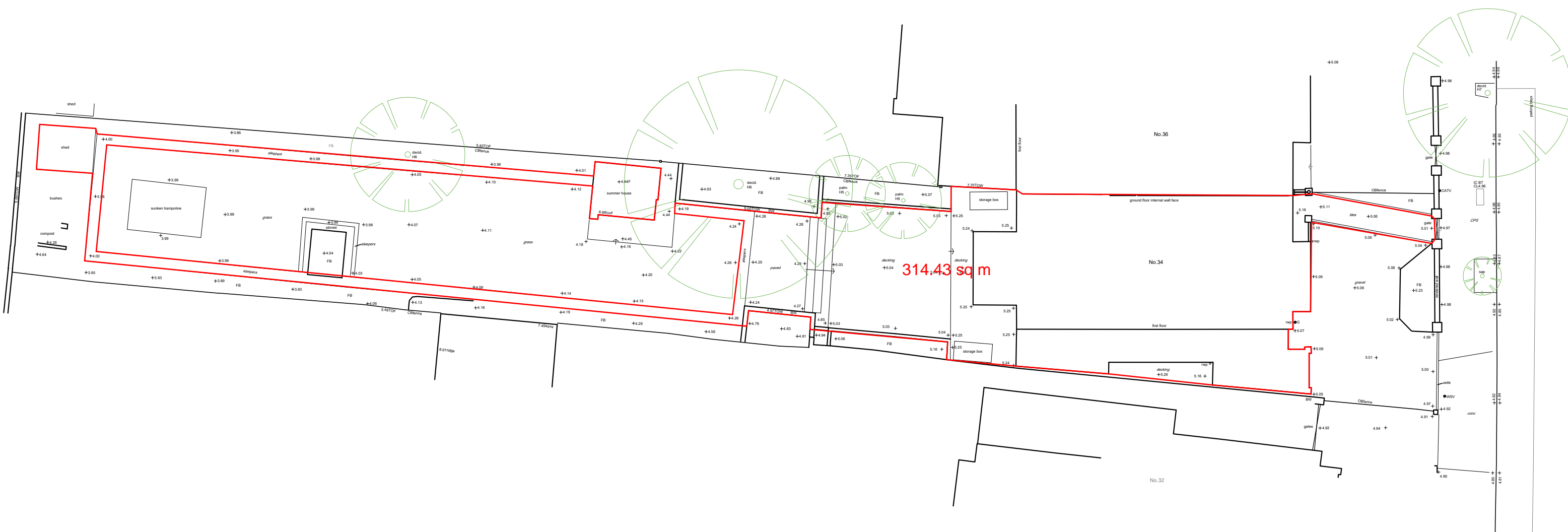


fwmh1
ust2X_1a56f0f2-c59a-4146-9f40-390ecc881a5a_20240207_230327_293.jpg, 00:00:34, 4.67 m
Loss of vision, silt



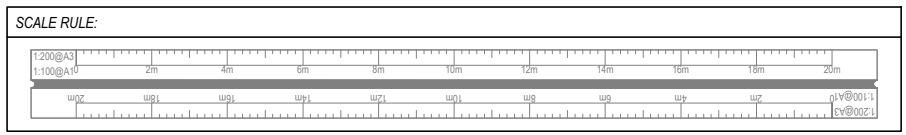
fwmh1
ust2X_c642e77b-8842-476c-844a-e57867a84940_20240207_230347_908.jpg, 00:00:34, 4.67 m
Survey abandoned, Silt

Appendix E - Calculations



1 | SITE PLAN AS EXISTING
00-01 | SCALE: 1:200 @ A3 // 1:50 @ A1

DISCLAIMER:
 Dimensions to be verified on site. Only figured dimensions to be used and any discrepancies in dimensions are to be reported to RJHA. No dimensions are to be scaled from printed drawings. Any areas indicated on this drawing are for guidance only. No responsibility is taken for their accuracy.
 There is a risk of injury or death in construction if works are not properly planned and supervised. The contractor must not undertake any elements of the work without first having carried out the necessary risk assessments and prepare detailed method statements.



JOB NUMBER : 8/2898
 DRAWING NUMBER : SK003
 TITLE : IMPERMEABLE AREAS PLAN
 DRAWN BY : CN
 DATE : 27.03.24
 REVISION : A



Clancy Consulting Ltd

19 Upper King Street,
Norwich,

Project 34 Nassau Road				Job no. 8/2898	
Calcs for Richard Hastings Architecture				Start page no./Revision 1	
Calcs by CN	Calcs date 27/03/2024	Checked by	Checked date	Approved by	Approved date

DESIGN RAINFALL

In accordance with the Wallingford Procedure

Tedds calculation version 2.0.02

Design rainfall intensity

Location of catchment area	London
Storm duration	D = 15 min
Return period	Period = 1 yr
Ratio 60 min to 2 day rainfall of 5 yr return period	r = 0.440
5-year return period rainfall of 60 minutes duration	M5_60min = 20.0 mm
Increase of rainfall intensity due to global warming	p _{climate} = 0 %
Factor Z1 (Wallingford procedure)	Z1 = 0.65
Rainfall for 15min storm with 5 year return period	M5_15min _i = Z1 × M5_60min = 12.9 mm
Factor Z2 (Wallingford procedure)	Z2 = 0.62
Rainfall for 15min storm with 1 year return period	M1_15min = Z2 × M5_15min _i = 8.0 mm
Design rainfall intensity	I _{max} = M1_15min / D = 31.9 mm/hr

Maximum surface water runoff

Catchment area	A _{catch} = 314 m ²
Percentage of area that is impermeable	p = 100 %
Maximum surface water runoff	Q _{max} = A _{catch} × p × I _{max} = 2.8 l/s



Clancy Consulting Ltd

19 Upper King Street,
Norwich,

Project 34 Nassau Road				Job no. 8/2898	
Calcs for Richard Hastings Architecture				Start page no./Revision 1	
Calcs by CN	Calcs date 27/03/2024	Checked by	Checked date	Approved by	Approved date

DESIGN RAINFALL

In accordance with the Wallingford Procedure

Tedds calculation version 2.0.02

Design rainfall intensity

Location of catchment area	London
Storm duration	D = 15 min
Return period	Period = 30 yr
Ratio 60 min to 2 day rainfall of 5 yr return period	r = 0.440
5-year return period rainfall of 60 minutes duration	M5_60min = 20.0 mm
Increase of rainfall intensity due to global warming	p _{climate} = 0 %
Factor Z1 (Wallingford procedure)	Z1 = 0.65
Rainfall for 15min storm with 5 year return period	M5_15min _r = Z1 × M5_60min = 12.9 mm
Factor Z2 (Wallingford procedure)	Z2 = 1.51
Rainfall for 15min storm with 30 year return period	M30_15min = Z2 × M5_15min _r = 19.5 mm
Design rainfall intensity	I _{max} = M30_15min / D = 78.2 mm/hr

Maximum surface water runoff

Catchment area	A _{catch} = 314 m ²
Percentage of area that is impermeable	p = 100 %
Maximum surface water runoff	Q _{max} = A _{catch} × p × I _{max} = 6.8 l/s



Clancy Consulting Ltd

19 Upper King Street,
Norwich,

Project 34 Nassau Road				Job no. 8/2898	
Calcs for Richard Hastings Architecture				Start page no./Revision 1	
Calcs by CN	Calcs date 27/03/2024	Checked by	Checked date	Approved by	Approved date

DESIGN RAINFALL

In accordance with the Wallingford Procedure

Tedds calculation version 2.0.02

Design rainfall intensity

Location of catchment area	London
Storm duration	D = 15 min
Return period	Period = 100 yr
Ratio 60 min to 2 day rainfall of 5 yr return period	r = 0.440
5-year return period rainfall of 60 minutes duration	M5_60min = 20.0 mm
Increase of rainfall intensity due to global warming	p _{climate} = 0 %
Factor Z1 (Wallingford procedure)	Z1 = 0.65
Rainfall for 15min storm with 5 year return period	M5_15min _i = Z1 × M5_60min = 12.9 mm
Factor Z2 (Wallingford procedure)	Z2 = 1.96
Rainfall for 15min storm with 100 year return period	M100_15min = Z2 × M5_15min _i = 25.3 mm
Design rainfall intensity	I _{max} = M100_15min / D = 101.2 mm/hr

Maximum surface water runoff

Catchment area	A _{catch} = 314 m ²
Percentage of area that is impermeable	p = 100 %
Maximum surface water runoff	Q _{max} = A _{catch} × p × I _{max} = 8.8 l/s



Clancy Consulting Ltd

19 Upper King Street,
Norwich,

Project				Job no.	
34 Nassau Road				8/2898	
Calcs for				Start page no./Revision	
Richard Hastings Architecture				1	
Calcs by	Calcs date	Checked by	Checked date	Approved by	Approved date
CN	27/03/2024				

DESIGN RAINFALL

In accordance with the Wallingford Procedure

Tedds calculation version 2.0.02

Design rainfall intensity

Location of catchment area	London
Storm duration	D = 15 min
Return period	Period = 100 yr
Ratio 60 min to 2 day rainfall of 5 yr return period	r = 0.440
5-year return period rainfall of 60 minutes duration	M5_60min = 20.0 mm
Increase of rainfall intensity due to global warming	p _{climate} = 40 %
Factor Z1 (Wallingford procedure)	Z1 = 0.65
Rainfall for 15min storm with 5 year return period	M5_15min _i = Z1 × M5_60min × (1 + p _{climate}) = 18.1 mm
Factor Z2 (Wallingford procedure)	Z2 = 2.01
Rainfall for 15min storm with 100 year return period	M100_15min = Z2 × M5_15min _i = 36.5 mm
Design rainfall intensity	I _{max} = M100_15min / D = 145.9 mm/hr

Maximum surface water runoff

Catchment area	A _{catch} = 314 m ²
Percentage of area that is impermeable	p = 100 %
Maximum surface water runoff	Q _{max} = A _{catch} × p × I _{max} = 12.7 l/s

Design Settings

Rainfall Methodology	FEH-22	Maximum Time of Concentration (mins)	30.00	Preferred Cover Depth (m)	1.200
Return Period (years)	2	Maximum Rainfall (mm/hr)	200.0	Include Intermediate Ground	✓
Additional Flow (%)	0	Minimum Velocity (m/s)	1.00	Enforce best practice design rules	x
CV	1.000	Connection Type	Level Soffits		
Time of Entry (mins)	4.00	Minimum Backdrop Height (m)	0.200		

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Node Type	Manhole Type	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
✓ SW 1.0	0.004	4.00	4.000	Manhole	Adoptable	450	423.124	998.046	0.600
✓ PP1	0.006	4.00	4.000	Manhole	Adoptable	450	418.063	1001.478	0.350
✓ PP2	0.002	4.00	4.030	Manhole	Adoptable	450	428.946	997.951	0.250
✓ SW 1.1			4.100	Manhole	Adoptable	450	437.337	996.774	0.879
✓ PP3	0.002	4.00	4.050	Manhole	Adoptable	450	429.604	1004.188	0.250
✓ SW 2.0			4.070	Manhole	Adoptable	450	435.128	1003.752	0.670
✓ PP4	0.003	4.00	4.260	Manhole	Adoptable	450	452.311	998.819	0.450
✓ SW 1.2			4.260	Manhole	Adoptable	450	454.892	996.112	2.460
✓ SW 1.3 PUMP	0.000	4.00	2.200	Manhole	Adoptable	1200	477.087	1001.214	3.611
✓ EX MH			5.010	Manhole	Adoptable	450	484.973	992.655	1.340
✓ SW 1.4	0.003	4.00	5.080	Manhole	Adoptable	450	481.696	999.905	1.290
✓ SW 1.5	0.002	4.00	5.010	Manhole	Adoptable	450	481.672	993.003	1.306
✓ PP5	0.005	4.00	5.050	Manhole	Adoptable	450	484.344	997.010	0.350
✓ SW 1.2a	0.017	4.00	2.200	Manhole	Adoptable	600	469.167	999.351	0.583

Links (Input)

Name	US Node	DS Node	Length (m)	ks (mm) / n	Velocity Equation	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	Link Type	T of C (mins)	Rain (mm/hr)
? 1.000	PP1	SW 1.0	6.115	0.600	Colebrook-White	3.650	3.574	0.076	80.0	100	Circular_Default Sewer Type	4.12	54.6
? 1.001	SW 1.0	SW 1.1	14.270	0.600	Colebrook-White	3.400	3.222	0.178	80.0	150	Circular_Default Sewer Type	4.33	54.6
? 3.000	PP2	SW 1.1	8.473	0.600	Colebrook-White	3.780	3.674	0.106	80.0	100	Circular_Default Sewer Type	4.16	54.6
? 2.000	PP3	SW 2.0	5.541	0.600	Colebrook-White	3.800	3.731	0.069	80.0	100	Circular_Default Sewer Type	4.11	54.6
? 2.001	SW 2.0	SW 1.1	7.319	0.600	Colebrook-White	3.400	3.221	0.179	40.9	150	Circular_Default Sewer Type	4.18	54.6

Links (Input)

Name	US Node	DS Node	Length (m)	ks (mm) / n	Velocity Equation	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	Link Type	T of C (mins)	Rain (mm/hr)
? 1.002	SW 1.1	SW 1.2	17.567	0.600	Colebrook-White	3.221	3.001	0.220	80.0	150	Circular_Default Sewer Type	4.59	54.6
? 4.000_1	PP4	SW 1.2	3.740	0.600	Colebrook-White	3.810	3.763	0.047	80.0	100	Circular_Default Sewer Type	4.07	54.6
? 1.003	SW 1.2	SW 1.2a	14.638	0.600	Colebrook-White	1.800	1.617	0.183	80.0	150	Circular_Default Sewer Type	4.81	54.6
? 1.005	SW 1.3 PUMP	SW 1.4	4.791	0.600	Colebrook-White	-1.411	3.790	-5.201	-0.9	100	Circular_Default Sewer Type	4.91	54.6
? 1.006	SW 1.4	SW 1.5	6.902	0.600	Colebrook-White	3.790	3.704	0.086	80.0	100	Circular_Default Sewer Type	5.04	54.5
? 4.000	PP5	SW 1.5	4.816	0.600	Colebrook-White	4.700	4.640	0.060	80.0	100	Circular_Default Sewer Type	4.09	54.6
? 1.007	SW 1.5	EX MH	3.319	0.600	Colebrook-White	3.704	3.670	0.034	97.6	100	Circular_Default Sewer Type	5.11	54.1
? 1.003a	SW 1.2a	SW 1.3 PUMP	8.136	0.600	Colebrook-White	1.617	-1.411	3.028	2.7	150	Circular_Default Sewer Type	4.83	54.6

Simulation Settings

Rainfall Methodology	FEH-22	Analysis Speed	Detailed	Additional Storage (m³/ha)	20.0
Summer CV	1.000	Skip Steady State	x	Check Discharge Rate(s)	x
Winter CV	1.000	Drain Down Time (mins)	240	Check Discharge Volume	x

Storm Durations

15	60	180	360	600	960	2160	4320	7200	10080
30	120	240	480	720	1440	2880	5760	8640	

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)	Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
2	0	0	0	100	0	0	0
30	0	0	0	100	40	0	0

Node PP1 Online Orifice Control

Flap Valve	x	Invert Level (m)	3.650	Design Flow (l/s)	0.1	Discharge Coefficient	0.600
Replaces Downstream Link	✓	Design Depth (m)	0.350	Diameter (m)	0.009		

Node PP2 Online Orifice Control

Flap Valve	x	Invert Level (m)	3.780	Design Flow (l/s)	0.1	Discharge Coefficient	0.600
Replaces Downstream Link	✓	Design Depth (m)	0.250	Diameter (m)	0.009		

Node PP3 Online Orifice Control

Flap Valve	x	Invert Level (m)	3.800	Design Flow (l/s)	0.1	Discharge Coefficient	0.600
Replaces Downstream Link	✓	Design Depth (m)	0.250	Diameter (m)	0.009		

Node PP4 Online Orifice Control

Flap Valve	x	Invert Level (m)	3.810	Design Flow (l/s)	0.1	Discharge Coefficient	0.600
Replaces Downstream Link	✓	Design Depth (m)	0.450	Diameter (m)	0.008		

Node SW 1.3 PUMP Online Pump Control

Flap Valve	x	Invert Level (m)	-1.411	Design Flow (l/s)	5.0	Switch off depth (m)	0.001
Replaces Downstream Link	x	Design Depth (m)	2.261	Switch on depth (m)	1.000		

Depth (m)	Flow (l/s)
2.261	5.000

Node PP5 Online Orifice Control

Flap Valve	x	Invert Level (m)	4.700	Design Flow (l/s)	0.1	Discharge Coefficient	0.600
Replaces Downstream Link	✓	Design Depth (m)	0.350	Diameter (m)	0.009		

Node SW 1.5 Online Orifice Control

Flap Valve	x	Invert Level (m)	3.704	Design Flow (l/s)	5.0	Discharge Coefficient	0.600
Replaces Downstream Link	✓	Design Depth (m)	1.376	Diameter (m)	0.045		

Node PP1 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Porosity	0.30	Width (m)	6.500	Depth (m)	
Side Inf Coefficient (m/hr)	0.00000	Invert Level (m)	3.650	Length (m)	8.500	Inf Depth (m)	0.200
Safety Factor	2.0	Time to half empty (mins)		Slope (1:X)	500.0		

Node PP2 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Porosity	0.30	Width (m)	2.000	Depth (m)	
Side Inf Coefficient (m/hr)	0.00000	Invert Level (m)	3.780	Length (m)	10.500	Inf Depth (m)	0.100
Safety Factor	2.0	Time to half empty (mins)		Slope (1:X)	500.0		

Node PP3 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Porosity	0.30	Width (m)	2.000	Depth (m)	
Side Inf Coefficient (m/hr)	0.00000	Invert Level (m)	3.800	Length (m)	10.500	Inf Depth (m)	0.100
Safety Factor	2.0	Time to half empty (mins)		Slope (1:X)	500.0		

Node PP4 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Porosity	0.30	Width (m)	3.500	Depth (m)	
Side Inf Coefficient (m/hr)	0.00000	Invert Level (m)	3.810	Length (m)	7.000	Inf Depth (m)	0.300
Safety Factor	2.0	Time to half empty (mins)		Slope (1:X)	500.0		

Node PP5 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Porosity	0.30	Width (m)	5.000	Depth (m)	
Side Inf Coefficient (m/hr)	0.00000	Invert Level (m)	4.700	Length (m)	9.000	Inf Depth (m)	0.200
Safety Factor	2.0	Time to half empty (mins)		Slope (1:X)	500.0		

Rainfall

Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)	Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)
2 year 15 minute summer	106.543	30.148	2 year 180 minute summer	26.848	6.909
2 year 15 minute winter	74.767	30.148	2 year 180 minute winter	17.452	6.909
2 year 30 minute summer	67.519	19.106	2 year 240 minute summer	21.748	5.747
2 year 30 minute winter	47.382	19.106	2 year 240 minute winter	14.449	5.747
2 year 60 minute summer	44.094	11.653	2 year 360 minute summer	16.802	4.324
2 year 60 minute winter	29.295	11.653	2 year 360 minute winter	10.922	4.324
2 year 120 minute summer	32.931	8.703	2 year 480 minute summer	13.155	3.476
2 year 120 minute winter	21.879	8.703	2 year 480 minute winter	8.740	3.476

Rainfall

Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)	Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)
2 year 600 minute summer	10.664	2.917	30 year 240 minute summer	49.680	13.129
2 year 600 minute winter	7.286	2.917	30 year 240 minute winter	33.006	13.129
2 year 720 minute summer	9.398	2.519	30 year 360 minute summer	36.944	9.507
2 year 720 minute winter	6.316	2.519	30 year 360 minute winter	24.015	9.507
2 year 960 minute summer	7.551	1.988	30 year 480 minute summer	28.311	7.482
2 year 960 minute winter	5.002	1.988	30 year 480 minute winter	18.809	7.482
2 year 1440 minute summer	5.306	1.422	30 year 600 minute summer	22.617	6.186
2 year 1440 minute winter	3.566	1.422	30 year 600 minute winter	15.453	6.186
2 year 2160 minute summer	3.706	1.024	30 year 720 minute summer	19.716	5.284
2 year 2160 minute winter	2.554	1.024	30 year 720 minute winter	13.250	5.284
2 year 2880 minute summer	3.053	0.818	30 year 960 minute summer	15.595	4.107
2 year 2880 minute winter	2.052	0.818	30 year 960 minute winter	10.331	4.107
2 year 4320 minute summer	2.325	0.608	30 year 1440 minute summer	10.692	2.865
2 year 4320 minute winter	1.531	0.608	30 year 1440 minute winter	7.185	2.865
2 year 5760 minute summer	1.953	0.500	30 year 2160 minute summer	7.263	2.007
2 year 5760 minute winter	1.264	0.500	30 year 2160 minute winter	5.005	2.007
2 year 7200 minute summer	1.705	0.435	30 year 2880 minute summer	5.850	1.568
2 year 7200 minute winter	1.100	0.435	30 year 2880 minute winter	3.932	1.568
2 year 8640 minute summer	1.534	0.391	30 year 4320 minute summer	4.292	1.122
2 year 8640 minute winter	0.990	0.391	30 year 4320 minute winter	2.827	1.122
2 year 10080 minute summer	1.411	0.360	30 year 5760 minute summer	3.497	0.895
2 year 10080 minute winter	0.910	0.360	30 year 5760 minute winter	2.263	0.895
30 year 15 minute summer	304.484	86.159	30 year 7200 minute summer	2.972	0.758
30 year 15 minute winter	213.673	86.159	30 year 7200 minute winter	1.918	0.758
30 year 30 minute summer	195.601	55.348	30 year 8640 minute summer	2.612	0.666
30 year 30 minute winter	137.264	55.348	30 year 8640 minute winter	1.686	0.666
30 year 60 minute summer	128.862	34.054	30 year 10080 minute summer	2.353	0.600
30 year 60 minute winter	85.613	34.054	30 year 10080 minute winter	1.518	0.600
30 year 120 minute summer	82.422	21.782	100 year 15 minute summer	394.773	111.707
30 year 120 minute winter	54.759	21.782	100 year 15 minute winter	277.034	111.707
30 year 180 minute summer	63.388	16.312	100 year 30 minute summer	255.606	72.328
30 year 180 minute winter	41.204	16.312	100 year 30 minute winter	179.373	72.328

Rainfall

Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)	Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)
100 year 60 minute summer	169.150	44.701	100 year 10080 minute summer	2.767	0.706
100 year 60 minute winter	112.379	44.701	100 year 10080 minute winter	1.786	0.706
100 year 120 minute summer	107.270	28.348	100 year +40% CC 15 minute summer	552.683	156.390
100 year 120 minute winter	71.268	28.348	100 year +40% CC 15 minute winter	387.848	156.390
100 year 180 minute summer	82.707	21.283	100 year +40% CC 30 minute summer	357.848	101.259
100 year 180 minute winter	53.762	21.283	100 year +40% CC 30 minute winter	251.122	101.259
100 year 240 minute summer	65.064	17.194	100 year +40% CC 60 minute summer	236.810	62.582
100 year 240 minute winter	43.227	17.194	100 year +40% CC 60 minute winter	157.331	62.582
100 year 360 minute summer	48.707	12.534	100 year +40% CC 120 minute summer	150.178	39.688
100 year 360 minute winter	31.661	12.534	100 year +40% CC 120 minute winter	99.775	39.688
100 year 480 minute summer	37.484	9.906	100 year +40% CC 180 minute summer	115.790	29.797
100 year 480 minute winter	24.903	9.906	100 year +40% CC 180 minute winter	75.266	29.797
100 year 600 minute summer	30.004	8.207	100 year +40% CC 240 minute summer	91.089	24.072
100 year 600 minute winter	20.501	8.207	100 year +40% CC 240 minute winter	60.517	24.072
100 year 720 minute summer	26.174	7.015	100 year +40% CC 360 minute summer	68.190	17.548
100 year 720 minute winter	17.591	7.015	100 year +40% CC 360 minute winter	44.325	17.548
100 year 960 minute summer	20.684	5.447	100 year +40% CC 480 minute summer	52.478	13.868
100 year 960 minute winter	13.702	5.447	100 year +40% CC 480 minute winter	34.865	13.868
100 year 1440 minute summer	14.094	3.777	100 year +40% CC 600 minute summer	42.006	11.490
100 year 1440 minute winter	9.472	3.777	100 year +40% CC 600 minute winter	28.701	11.490
100 year 2160 minute summer	9.447	2.611	100 year +40% CC 720 minute summer	36.644	9.821
100 year 2160 minute winter	6.509	2.611	100 year +40% CC 720 minute winter	24.627	9.821
100 year 2880 minute summer	7.510	2.013	100 year +40% CC 960 minute summer	28.958	7.625
100 year 2880 minute winter	5.047	2.013	100 year +40% CC 960 minute winter	19.182	7.625
100 year 4320 minute summer	5.376	1.406	100 year +40% CC 1440 minute summer	19.732	5.288
100 year 4320 minute winter	3.540	1.406	100 year +40% CC 1440 minute winter	13.261	5.288
100 year 5760 minute summer	4.289	1.098	100 year +40% CC 2160 minute summer	13.226	3.655
100 year 5760 minute winter	2.776	1.098	100 year +40% CC 2160 minute winter	9.113	3.655
100 year 7200 minute summer	3.586	0.915	100 year +40% CC 2880 minute summer	10.514	2.818
100 year 7200 minute winter	2.314	0.915	100 year +40% CC 2880 minute winter	7.066	2.818
100 year 8640 minute summer	3.108	0.793	100 year +40% CC 4320 minute summer	7.527	1.968
100 year 8640 minute winter	2.006	0.793	100 year +40% CC 4320 minute winter	4.957	1.968

Rainfall

Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)	Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)
100 year +40% CC 5760 minute summer	6.004	1.537	100 year +40% CC 8640 minute summer	4.351	1.110
100 year +40% CC 5760 minute winter	3.886	1.537	100 year +40% CC 8640 minute winter	2.808	1.110
100 year +40% CC 7200 minute summer	5.020	1.281	100 year +40% CC 10080 minute summer	3.874	0.988
100 year +40% CC 7200 minute winter	3.240	1.281	100 year +40% CC 10080 minute winter	2.501	0.988

Results for 2 year Critical Storm Duration. Lowest mass balance: 0.35%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m ³)	Flood (m ³)	Status
15 minute summer	SW 1.0	10	3.421	0.021	0.8	0.0061	0.0000	OK
180 minute winter	PP1	168	3.720	0.070	0.3	1.0481	0.0000	OK
240 minute winter	PP2	156	3.832	0.052	0.1	0.2758	0.0000	OK
15 minute summer	SW 1.1	11	3.242	0.021	0.8	0.0033	0.0000	OK
240 minute winter	PP3	156	3.852	0.052	0.1	0.2758	0.0000	OK
240 minute winter	SW 2.0	156	3.404	0.004	0.0	0.0007	0.0000	OK
480 minute winter	PP4	304	3.882	0.072	0.1	0.4970	0.0000	OK
15 minute summer	SW 1.2	11	1.821	0.021	0.8	0.0034	0.0000	OK
240 minute winter	SW 1.3 PUMP	104	-0.411	1.000	1.0	1.1312	0.0000	SURCHARGED
15 minute summer	EX MH	1	3.670	0.000	0.4	0.0000	0.0000	OK
360 minute winter	SW 1.4	264	3.806	0.016	0.4	0.0032	0.0000	OK
15 minute summer	SW 1.5	11	3.738	0.034	0.5	0.0065	0.0000	OK
720 minute winter	PP5	480	4.769	0.069	0.1	0.8448	0.0000	OK
15 minute summer	SW 1.2a	10	1.636	0.019	4.0	0.0167	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m ³)	Discharge Vol (m ³)
15 minute summer	SW 1.0	1.001	SW 1.1	0.8	0.549	0.041	0.0210	
180 minute winter	PP1	Orifice	SW 1.0	0.0				
240 minute winter	PP2	Orifice	SW 1.1	0.0				
15 minute summer	SW 1.1	1.002	SW 1.2	0.8	0.550	0.040	0.0256	
240 minute winter	PP3	Orifice	SW 2.0	0.0				
240 minute winter	SW 2.0	2.001	SW 1.1	0.0	0.143	0.001	0.0031	
480 minute winter	PP4	Orifice	SW 1.2	0.0				
15 minute summer	SW 1.2	1.003	SW 1.2a	0.8	0.616	0.040	0.0201	
240 minute winter	SW 1.3 PUMP	1.005	SW 1.4	0.2	-0.572	0.029	0.0201	
360 minute winter	SW 1.4	1.006	SW 1.5	0.4	0.330	0.053	0.0104	
15 minute summer	SW 1.5	Orifice	EX MH	0.4				0.5
720 minute winter	PP5	Orifice	SW 1.5	0.0				
15 minute summer	SW 1.2a	1.003a	SW 1.3 PUMP	4.0	1.514	0.036	0.0770	

Results for 30 year Critical Storm Duration. Lowest mass balance: 0.35%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	SW 1.0	10	3.435	0.035	2.2	0.0101	0.0000	OK
480 minute winter	PP1	448	3.819	0.169	0.3	2.7387	0.0000	FLOOD RISK
120 minute winter	PP2	112	3.896	0.116	0.3	0.7033	0.0000	FLOOD RISK
15 minute summer	SW 1.1	10	3.256	0.035	2.3	0.0055	0.0000	OK
120 minute winter	PP3	112	3.916	0.116	0.3	0.7033	0.0000	FLOOD RISK
120 minute winter	SW 2.0	114	3.405	0.005	0.1	0.0008	0.0000	OK
180 minute summer	PP4	164	3.978	0.168	0.5	1.2296	0.0000	FLOOD RISK
15 minute summer	SW 1.2	11	1.835	0.035	2.2	0.0056	0.0000	OK
30 minute summer	SW 1.3 PUMP	21	0.757	2.168	9.8	2.4515	0.0000	SURCHARGED
15 minute summer	EX MH	1	3.670	0.000	1.1	0.0000	0.0000	OK
180 minute summer	SW 1.4	116	4.090	0.300	2.7	0.0619	0.0000	SURCHARGED
180 minute summer	SW 1.5	116	4.077	0.373	2.6	0.0709	0.0000	SURCHARGED
360 minute winter	PP5	336	4.862	0.162	0.3	2.1420	0.0000	FLOOD RISK
15 minute summer	SW 1.2a	10	1.649	0.032	11.6	0.0281	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	SW 1.0	1.001	SW 1.1	2.2	0.736	0.112	0.0432	
480 minute winter	PP1	Orifice	SW 1.0	0.1				
120 minute winter	PP2	Orifice	SW 1.1	0.1				
15 minute summer	SW 1.1	1.002	SW 1.2	2.2	0.737	0.112	0.0529	
120 minute winter	PP3	Orifice	SW 2.0	0.1				
120 minute winter	SW 2.0	2.001	SW 1.1	0.1	0.166	0.002	0.0057	
180 minute summer	PP4	Orifice	SW 1.2	0.1				
15 minute summer	SW 1.2	1.003	SW 1.2a	2.2	0.803	0.113	0.0428	
30 minute summer	SW 1.3 PUMP	1.005	SW 1.4	1.3	-0.964	0.165	0.0234	
180 minute summer	SW 1.4	1.006	SW 1.5	2.4	0.509	0.355	0.0540	
180 minute summer	SW 1.5	Orifice	EX MH	2.5				11.9
360 minute winter	PP5	Orifice	SW 1.5	0.1				
15 minute summer	SW 1.2a	1.003a	SW 1.3 PUMP	11.6	1.167	0.106	0.0830	

Results for 100 year Critical Storm Duration. Lowest mass balance: 0.35%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m ³)	Flood (m ³)	Status
15 minute summer	SW 1.0	10	3.440	0.040	2.9	0.0117	0.0000	OK
360 minute summer	PP1	360	3.866	0.216	0.8	3.5521	0.0000	FLOOD RISK
180 minute winter	PP2	164	3.940	0.160	0.3	0.9969	0.0000	FLOOD RISK
15 minute summer	SW 1.1	10	3.261	0.040	3.0	0.0063	0.0000	OK
180 minute winter	PP3	164	3.960	0.160	0.3	0.9969	0.0000	FLOOD RISK
180 minute winter	SW 2.0	164	3.406	0.006	0.1	0.0009	0.0000	OK
240 minute summer	PP4	228	4.033	0.223	0.5	1.6524	0.0000	FLOOD RISK
15 minute summer	SW 1.2	11	1.840	0.040	3.0	0.0064	0.0000	OK
30 minute summer	SW 1.3 PUMP	22	1.479	2.890	12.8	3.2690	0.0000	SURCHARGED
15 minute summer	EX MH	1	3.670	0.000	1.2	0.0000	0.0000	OK
180 minute summer	SW 1.4	112	4.419	0.629	3.7	0.1296	0.0000	SURCHARGED
180 minute summer	SW 1.5	112	4.393	0.689	3.6	0.1309	0.0000	SURCHARGED
360 minute summer	PP5	360	4.917	0.217	0.7	2.9076	0.0000	FLOOD RISK
15 minute summer	SW 1.2a	11	1.655	0.038	15.1	0.0332	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m ³)	Discharge Vol (m ³)
15 minute summer	SW 1.0	1.001	SW 1.1	2.9	0.795	0.148	0.0527	
360 minute summer	PP1	Orifice	SW 1.0	0.1				
180 minute winter	PP2	Orifice	SW 1.1	0.1				
15 minute summer	SW 1.1	1.002	SW 1.2	2.9	0.798	0.148	0.0647	
180 minute winter	PP3	Orifice	SW 2.0	0.1				
180 minute winter	SW 2.0	2.001	SW 1.1	0.1	0.174	0.002	0.0058	
240 minute summer	PP4	Orifice	SW 1.2	0.1				
15 minute summer	SW 1.2	1.003	SW 1.2a	3.0	0.857	0.149	0.0536	
30 minute summer	SW 1.3 PUMP	1.005	SW 1.4	3.7	-1.110	0.477	0.0375	
180 minute summer	SW 1.4	1.006	SW 1.5	3.3	0.424	0.490	0.0540	
180 minute summer	SW 1.5	Orifice	EX MH	3.5				16.9
360 minute summer	PP5	Orifice	SW 1.5	0.1				
15 minute summer	SW 1.2a	1.003a	SW 1.3 PUMP	15.1	1.195	0.138	0.0860	

Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 0.35%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	SW 1.0	10	3.447	0.047	4.0	0.0138	0.0000	OK
600 minute summer	PP1	600	3.955	0.305	0.7	5.0736	0.0000	FLOOD RISK
180 minute summer	PP2	180	4.004	0.224	0.6	1.4173	0.0000	FLOOD RISK
15 minute summer	SW 1.1	10	3.268	0.047	4.1	0.0075	0.0000	OK
180 minute summer	PP3	180	4.024	0.224	0.6	1.4173	0.0000	FLOOD RISK
180 minute summer	SW 2.0	180	3.406	0.006	0.1	0.0010	0.0000	OK
360 minute summer	PP4	344	4.135	0.325	0.6	2.4315	0.0000	FLOOD RISK
30 minute summer	SW 1.2	23	2.194	0.394	7.2	0.0627	0.0000	SURCHARGED
30 minute summer	SW 1.3 PUMP	23	2.184	3.595	16.9	4.0663	0.0000	FLOOD RISK
15 minute summer	EX MH	1	3.670	0.000	2.6	0.0000	0.0000	OK
180 minute summer	SW 1.4	112	5.037	1.247	5.1	0.2570	0.0000	FLOOD RISK
180 minute summer	SW 1.5	116	4.984	1.280	5.0	0.2432	0.0000	FLOOD RISK
600 minute summer	PP5	600	5.005	0.305	0.6	4.1342	0.0000	FLOOD RISK
30 minute summer	SW 1.2a	23	2.193	0.576	18.1	0.4985	0.0000	FLOOD RISK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	SW 1.0	1.001	SW 1.1	4.0	0.865	0.204	0.0668	
600 minute summer	PP1	Orifice	SW 1.0	0.1				
180 minute summer	PP2	Orifice	SW 1.1	0.1				
15 minute summer	SW 1.1	1.002	SW 1.2	4.1	0.872	0.204	0.0817	
180 minute summer	PP3	Orifice	SW 2.0	0.1				
180 minute summer	SW 2.0	2.001	SW 1.1	0.1	0.186	0.003	0.0088	
360 minute summer	PP4	Orifice	SW 1.2	0.1				
30 minute summer	SW 1.2	1.003	SW 1.2a	-3.9	0.721	-0.196	0.2577	
30 minute summer	SW 1.3 PUMP	1.005	SW 1.4	4.7	-0.791	0.604	0.0375	
180 minute summer	SW 1.4	1.006	SW 1.5	4.7	0.599	0.694	0.0540	
180 minute summer	SW 1.5	Orifice	EX MH	4.7				25.3
600 minute summer	PP5	Orifice	SW 1.5	0.1				
30 minute summer	SW 1.2a	1.003a	SW 1.3 PUMP	16.9	1.234	0.155	0.1432	

Appendix F – Borehole Logs



RECORD OF WELL (SHAFT OR BORE)

270

1" N.S. 270

1" O.S.

Grid Ref. TQ 27 37

At Civil Service Sports Ground, Dukes Meadows
Town or Village Chiswick County Middlesex Six-inch quarter sheet N.8. NW. (E)

Exact site NE side of the Church - Barnes railway line (A rough sketch-map or a tracing from a map is very desirable)
(Southern Ry.) (b) off to the new embankment + below high tide level in parish of London

Level of ground surface above sea-level (O.D.) 115 ft. If well starts below ground surface, state how far _____ ft.

Shaft 15 ft., diameter 3 1/2 ft. Bore _____ ft. Diameter of bore: at top _____ ins.; at bottom _____ ins.

Details of permanent lining tubes (internal diameters preferred) Shaft brick lined.

TQ 27 NW 427
2141 7652

Water struck at depths of (feet) _____

Rest-level of water below top of well _____ feet. Suction at _____ feet. Yield on _____ hours' test
above top of well _____ feet. gallons per _____ (with pump of capacity _____ g.p.h.); depressing water level to _____ feet below top. Time of recovery _____ hrs. Amount normally pumped daily _____ g.p.h. for _____ hours.

Quality (attach copy of analysis if available) _____

Sunk by British Overhead Irrigation Ltd. for Mr. _____ Date of well 1930

Information from British Overhead Irrigation Ltd., Upper Hallford, Shepperton, Middlesex.

(For Survey use only). GEOLOGICAL CLASSIFICATION.	NATURE OF STRATA (and any additional remarks).	THICKNESS		DEPTH	
		Feet.	Inches.	Feet.	Inches.
<u>Soil</u>	<u>Soil</u>	<u>4</u>	<u>6</u>	<u>4</u>	<u>6</u>
<u>Alluvium or F.P. gravel.</u>	<u>Finely coarse gravel, becoming finer, then sand.</u>	<u>10</u>	<u>6</u>	<u>15</u>	
<u>London clay</u>	<u>Blue clay (digging stopped)</u>			<u>15 +</u>	
<u>Sect.</u>					
<u>17.40.</u>					

Notes made (by B.O.I. Ltd.) on Jan 30th 1935:

At start water 4' 9" from surface. In 13 1/2 minutes at 2400 g.p.h. level lowered 8' 8" and 20" water left. level recovered 4' 3" in 1/2 hour after pump stopped, ie well filled at about 560 g.p.h.
Pumping at 720 g.p.h. starting with 7' 6" the level from surface: 1st ten mins level fell 1' 10" sixty mins " " 4' 11"
conclusion: Well after standing, 560 g.p.h. available after pumping for just under 1/2 hr at about 3100 g.p.h. pump closed. Well then filled up at rate of 560 g.p.h. Pumping at 720 g.p.h. for one hour (standing water level 7' 6" from ground) lowered level to 12' 3" at which still over a foot of water available. Slowing pump to 540 g.p.h. at this stage allowed the well to gain 4" in 20 minutes.

(b) (a) Abyssinian Tube wells. 1 1/2 in. tube about 15ft. deep gave good supply of water but on fitting power pump, too much sand was obtained and it was decided to dig (b)

P.T.O.



Percussion Drilling Log

Project Name: 34 Nassau Road		Client: Tom Richards		Date:	
Location: SW13 9QE		Contractor:			
Project No. : GWPR5909		Crew Name:		Drilling Equipment:	
Borehole Number WS01	Hole Type WLS	Level	Logged By	Scale 1:50	Page Number Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.20	D				MADE GROUND: Dark brown sandy gravelly CLAY. Sand is fine. gravel is fine to coarse, angular to sub-rounded of flint (80%), brick (15%) and chalk (5%).	1	
		0.50	D						
		0.80	D						
		1.00	D					Orange brown very sandy CLAY. Sand is fine. (KEMPTON PARK GRAVEL MEMBER).	
		1.20	SPT	N=28 (11,7/7,7,7,7)	1.20				
		1.50	D					Light brown very sandy GRAVEL. Sand is fine to coarse. Gravel is fine to coarse, angular to sub-rounded of flint. (KEMPTON PARK GRAVEL MEMBER).	2
		2.00	D			1.80			
		2.00	SPT	27 (25,24/27,,)					
		2.50	D						
		3.00	D			3.00			3
	3.00	SPT	N=47 (18,12/11,12,12,12)				End of Borehole at 3.000m	4	
								5	
								6	
								7	
								8	
								9	
								10	

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation			
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation

Remarks
 Roots noted to 1.20
 Groundwater noted at 2.90m bgl





Percussion Drilling Log

Project Name: 34 Nassau Road		Client: Tom Richards		Date:	
Location: SW13 9QE		Contractor:			
Project No. : GWPR5909		Crew Name:		Drilling Equipment:	
Borehole Number WS02	Hole Type WLS	Level	Logged By	Scale 1:50	Page Number Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description		
		Depth (m)	Type	Results						
		0.20	D				MADE GROUND: Dark brown sandy gravelly CLAY. Sand is fine. gravel is fine to coarse, angular to sub-rounded of flint (80%), brick (15%) and chalk (5%).	1		
		0.50	D							
		0.80	D					Orange brown very sandy CLAY. Sand is fine. (KEMPTON PARK GRAVEL MEMBER).	2	
		1.00	D							
		1.20	SPT	N=21 (6,4/4,5,6,6)	1.20					
			1.50	D					Light brown very sandy GRAVEL. Sand is fine to coarse. Gravel is fine to coarse, angular to sub-rounded of flint. (KEMPTON PARK GRAVEL MEMBER).	3
		2.00	D							
		2.00	SPT	27 (25,22/27,...)	2.20			End of Borehole at 4.000m	4	
		2.50	D							
		3.00	D							
	3.00	SPT	N=52 (20,11/12,14,13,13)					5		
		3.50	D					6		
		4.00	D		4.00			7		
								8		
								9		
								10		

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation			
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation

Remarks
 Roots noted to 1.50. Groundwater noted at 2.80m bgl.
 No SPT at 4.00m bgl due to sands filling up casing.



Appendix G – Proposed Drainage Strategy